



Canada Border  
Services Agency

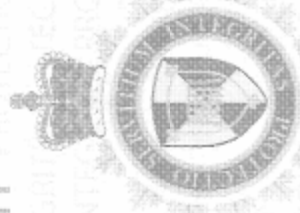
Agence des services  
frontaliers du Canada



## Data Analytics Initiative: Business Case

Executive Committee  
July 7, 2016

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## Purpose

- Further to the Executive Committee's approval of a Data Analytics Strategy in November, 2015, this presentation:
  - Provides a progress report on the Data Analytics initiative.
  - Seeks approval of a high-level business case for investments over three fiscal years.
- Our vision is to transform the Agency's capacity to drive better outcomes and decisions by moving from a siloed to an enterprise approach to data analytics.
- In alignment with the approved Strategy, this business case seeks to leverage the Agency's existing investments in analytics and to propose a funding strategy for priority foundational initiatives.



# Strategic Objectives

The Data Analytics Strategy is strengthening the CBSA's capacity to deliver a "border of the future" that will be faster, cheaper, and more secure.

- **Securing Canada's borders**
  - Taking advantage of advanced analytics to "push the border out" and to enable interdiction of high-risk travellers and goods as early as possible in the continuum;
  - Supporting effective and integrated enforcement at ports of entry, as well as more effective inland enforcement and criminal investigations.
- **Streamlining the border experience**
  - Providing a seamless experience at the border for low risk travellers and goods, with little or no interaction with border officers.
  - Maintaining comprehensive interaction data on all travellers and goods in real-time throughout the continuum, allowing the Agency to better predict future patterns.
- **Management excellence**
  - More timely, reliable, and accessible data to support the Government's "Results and Delivery" agenda;
  - Integrated financial and operational data for resource allocation and business enhancement;
  - Secure and efficient release of datasets for Open Government. Mitigation of "Information Integrity" risks and improved data integrity for OAG audits, internal audits, and evaluations.



# Data Analytics Strategy

- An integrated, enterprise approach based on increasing our maturity above industry standard over next three years.

## Data Governance

- **Governance Structure.** Provide an Agency-wide approach to decision-making on data issues.
- **Stewardship.** Designate data stewards and centres of expertise, with clear roles and responsibilities.
- **Standards and policies.** Implement common definitions, data quality processes, and an enterprise data model.

## Business Intelligence

- **Data Integration.** Build an integrated data warehouse, drawing on key data from multiple sources.
- **Self-service.** Enable quick access to key reports and data.
- **Competency Centre.** Create a Business Analytics Centre within ISTB for cross-functional support and coordination.

## Advanced Analytics

- **Data acquisition.** Provide analysts with access to key data from internal and external sources.
- **Emerging tools and techniques.** Explore potential for predictive analytics, visualization, and other advanced tools.
- **Workforce development.** Recruit and develop high-skilled analysts.





## Action Plan - High-level Roadmap

	2016-2017	2017-2018	2018-2019
<b>Data Governance</b>	Establish Data Governance Centre	Continue to address data integrity priorities	Ongoing data governance, quality control
	Complete Business Data Model - Phase II	Operationalize Business Data Model	Ongoing maintenance
	Launch Open Government Implementation Plan (OGIP) 2016	Release planning of data and information, OGIP 2017	Ongoing delivery of data and information, OGIP 2018
<b>Business Intelligence</b>	Establish Integrated Data Warehouse (IDW)	Data acquisition and service delivery	Ongoing data acquisition and service delivery
	Define requirements for Integrated Performance Reporting (IPR) tool	Seek capital investment funding, project launch	Project implementation and iterative delivery
<b>Advanced Analytics</b>	Expand operational analytics capacity (Targeting, Intelligence)	Implement operational analytics environment	Ongoing people management, maintenance
	Complete Program Optimization pilots	Expand data science capacity	Ongoing people management



# Progress Report

## Completed:

- ✓ Established VP-led Information Management Committee and working groups.
- ✓ Completed Data Quality Assessment with participation of all branches.
- ✓ Completed first phase of the CBSA Business Data Model.

## In Progress:

- Initiated data inventory to meet 2016 Open Government Directive obligations.
- Began phase 2 of the CBSA Business Model - common Agency data concepts, definitions, and ownership.

Data  
Governance

## Completed:

- ✓ Completed first phase of Integrated Data warehouse (IDW) high-level requirements.
- ✓ Transferred CMRS team to ISTB in order to build Data Services capacity.

## In Progress:

- Initiated SLMF process for the Integrated Performance Reporting (IPR) initiative.
- Continue to establish Data Services functions within ISTB.

Business  
Intelligence

## Completed:

- ✓ Completed [redacted] in NTC and demonstrated business value.
- ✓ Completed first pilot of predictive analytics for traveller targeting.

## In Progress:

- National Targeting Centre (NTC) and Science & Engineering in ISTB continuing to conduct pilot projects of next generation technologies.
- Several pilots underway: predictive analytics for [redacted] advanced statistical tools and information visualization for situational awareness.
- Working with B5 partners to develop "community of practice" on analytics.

Advanced  
Analytics



## Community of Practice

- The “Tooth to Tail exercise” identified over 225 FTEs at NHQ which support the performance reporting and analytics function. A further 50 FTEs carry out this function in the regions.
- This is the core community which depends upon the quality and accessibility of performance data, and which will be asked to make “in-kind” contributions to the Data Analytics initiative.
- Within this community, the existing centres of expertise include:

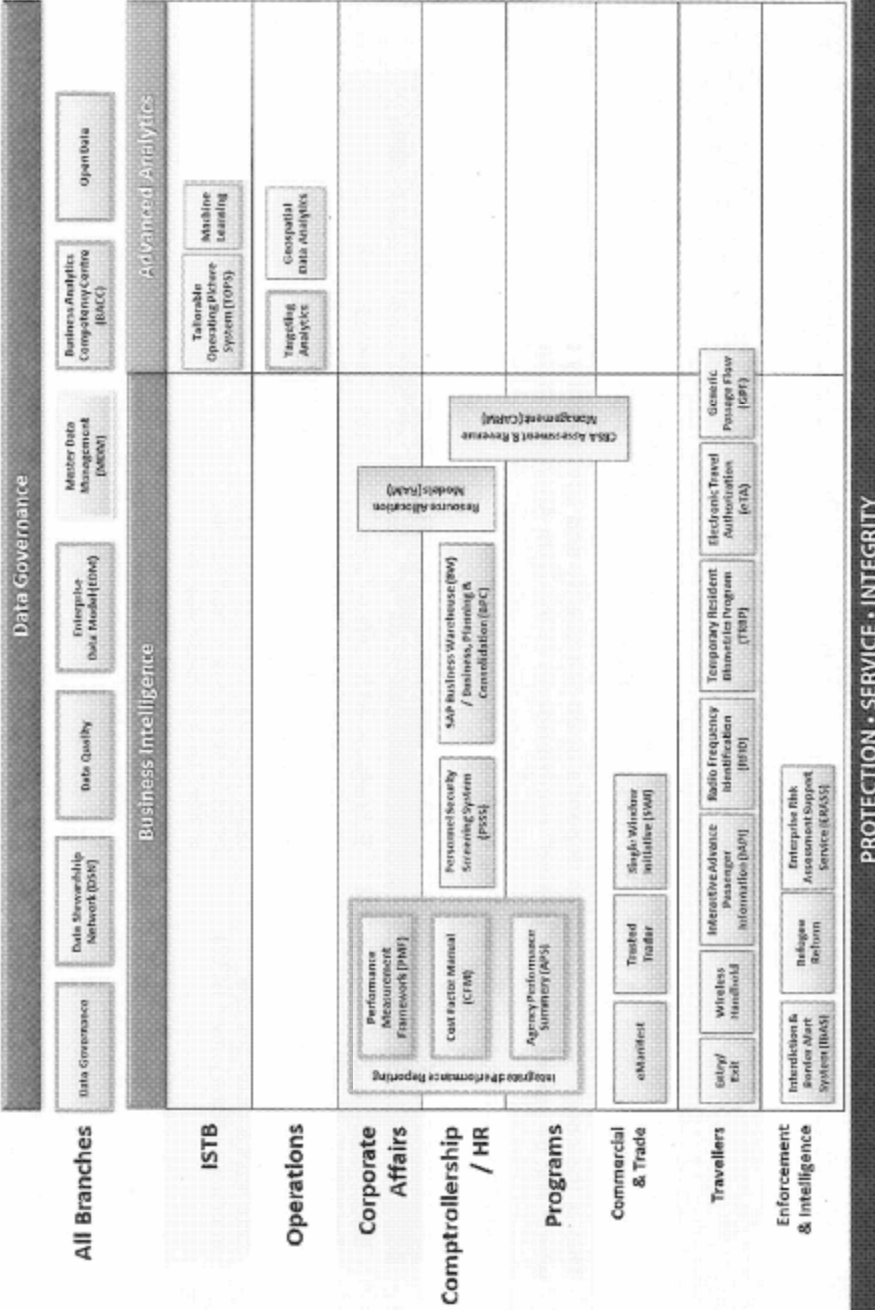
Organization	Roles	Resources
Global Border Management and Data Analytics (Programs)	“Business owner” for data services, provides leadership on data governance and integrated performance reporting	FTEs: 5 analysts, working closely on this initiative with Performance Reporting teams in Program areas
Enterprise Architecture and Information Management (ISTB)	Leads Open Data initiatives, manages intake for new analytics requirements, architecture, and service alignment	FTEs: 5 analysts, plus contractors
Science & Engineering Directorate (ISTB)	Provides advanced analytics services for program optimization, including predictive analytics and data visualization pilots	FTEs: 3 mathematicians
National Targeting Centre (Operations)	Data Analytics Unit focuses on tactical targeting analytics, leads collaboration with B5 partners on operational analytics	FTEs: 14, plus contractors
Enforcement and Intelligence (Operations).	Data Exploitation team deploys basic geospatial analytics.	FTEs: 2

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## Data Analytics – Related Initiatives

Potential Business Case Inputs (funding pressures)



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## Related initiatives (ctd)

- **Potential new funding:**

- **Refugee Reform.** Assisted Voluntary Removal and Repatriation (AVRR) program provides an opportunity to improve the quality and accessibility of immigration enforcement data. This work, in turn, depends on a solid data analytics infrastructure. The data governance tools developed to improve detention and removal statistics, for example, will benefit other program areas as well.
- **Entry-Exit.** A robust data stewardship capacity is required in order ensure the quality of data collected on some 97 million travellers per year. It will be essential to implement this capacity before the relevant legislative amendments take force in July 2017.
- **Other "In-Flight" Projects.** Resources for analytics have been included in existing projects such as Master Data Management (\$10 million for identity resolution) and eManifest, which has expended approximately \$30 million for analytics and reporting infrastructure. New deployments based on this infrastructure will be released in mid-2016.
- **Future Projects.** All future CBSA projects should clearly identify resource requests for analytics, and their alignment with the Agency's data analytics strategy, within the relevant Cabinet documents and TB submissions. Phase 3 of CARM, for example, will require a major investment in analytics and revenue generation.



## Funding Strategy

### Guiding principles:

- **Salary:** Minimal new requirements in short term. Use new Entry-Exit funding (\$410,000), internal reallocation, and in-kind contributions where possible (e.g. task forces). Review requirements in 2017-18.
- **O&M:** Seek \$2.3 M in contributions for this fiscal year. Provide new funding from Refugee Reform (AVRR) and Entry-Exit for foundational elements  
Funding for subsequent years to be confirmed at a later date.
- **Capital:** Complete detailed proposal this year in preparation for Investment Plan (2017-18) and Budget 2017. Funding will be used to build an Integrated Performance Reporting tool.

	2016-17	2017-18	2018-19	Total
Salary	<b>\$0.4M</b>	\$0.8M (TBC)	\$0.8M (TBC)	\$2.0M
O&M	<b>\$2.3M</b>	\$2.1M (TBC)	\$1.7M (TBC)	\$6.1M
Capital	-	\$3.0M (TBC)	\$3.0M (TBC)	\$6.0M



# Data Governance

## Key Requirements, 2016-17:

### 1. *Data Governance Centre*

- Consistent data policies and quality standards are a foundational element for both business intelligence and advanced analytics.
- This work is essential for launching the next phase of the Entry-Exit project and for improving the quality of detention and removals statistics.
- Funding is required to build a data stewardship network and resolve data integrity issues in support of the Agency's priorities.

### 2. *Business Data Model*

- Provides common definitions for use across the Agency's data. First two phases were completed in 2015-16 using a "tiger team" approach.
- Funding is required to provide expertise for development of the next phase of the Business Data Model. Initial focus on Immigration Enforcement and Entry-Exit.

### 3. *Open Government Coordination Office*

- Located in Open Government and Data Services Division, ISTB.
- Funding is required to achieve compliance with the TBS Open Government Directive, including completing the CBSA Open Government Implementation Plan 2016 and a data inventory.



## Data Governance (ctd)

Initiative / Lead	2016-17	2017-18	2018-19	Total
<b>1. Data Governance Centre (DGC)</b> <i>Programs</i>	<ul style="list-style-type: none"><li>Establish Data Stewardship Network and DGC</li><li>Entry Exit and</li><li>Master Data governance</li></ul>	<ul style="list-style-type: none"><li>Develop Data and Quality Control Standards</li><li>Operationalize DGC</li></ul>	<ul style="list-style-type: none"><li>Continued Improvement and stabilization of services</li></ul>	
	Salary: \$120,000, 3 FTEs (E/E) O&M: \$400,000 (AVRR)	Salary: \$240,000, 3 FTEs O&M: \$200,000	Salary: \$240,000, 3 FTEs O&M: \$200,000	Sal: \$600,000 O&M: \$800,000
<b>2. CBSA Business Data Model</b> <i>ISTB</i>	<ul style="list-style-type: none"><li>Initial CBSA Business Data Model complete</li><li>Next phase:</li></ul>	<ul style="list-style-type: none"><li>Operationalize CBSA Business Data Model</li><li>Integration of Model into prioritization and planning of all reporting projects</li></ul>	<ul style="list-style-type: none"><li>Ongoing operationalization and improvements</li></ul>	
	O&M: \$400,000 (AVRR)	O&M: \$200,000	O&M: \$100,000	O&M: \$700,000
<b>3. Open Government Coordination Office (OGCO)</b> <i>ISTB</i>	<ul style="list-style-type: none"><li>Complete data inventory</li><li>Open Government Implementation Plan (OGIP) 2016 Edition</li><li>Open Data release plan and schedule</li></ul>	<ul style="list-style-type: none"><li>Release planning of data sets</li><li>Open Information release</li><li>OGIP 2017 Edition</li></ul>	<ul style="list-style-type: none"><li>Ongoing proactive release of data and information</li><li>OGIP 2018 Edition</li></ul>	
	O&M: \$250,000 (ISTB)	O&M: \$250,000	O&M: \$100,000	O&M: \$600,000
	Salary: \$120,000 O&M: \$1,050,000 Total: \$1,170,000	Salary: \$240,000 O&M: \$650,000 Total: \$890,000	Salary: \$240,000 O&M: \$400,000 Total: \$640,000	Sal: \$0.60M O&M: \$2.10M Total: \$2.70M





# Business Intelligence

## Key Requirements, 2016-17:

### 1. *Integrated Data Warehouse*

- Repository for the Agency's key data, including financial and operational data.
- Funding required to organize this data according to a service oriented architecture.

### 2. *Integrated Performance Reporting*

- User-friendly tool for access to the integrated data warehouse.
- Linked to replacement of obsolete "G11" data collection system.
- Sponsored by Programs, Corporate Affairs, Comptrollership.
- Funding required to prepare costing for Investment Plan (2017-18) and Budget 2017.

### 3. *Immigration Data*

- CBSA's immigration-related data resides in the IRCC data warehouse.
- Funding required to develop detailed plan for integration into CBSA's data warehouse.

### 4. *Business Analytics Competency Centre*

- Funding required to provide leadership within ISTB on analytics requirements, training, and implementation.

## Business Intelligence (ctd)

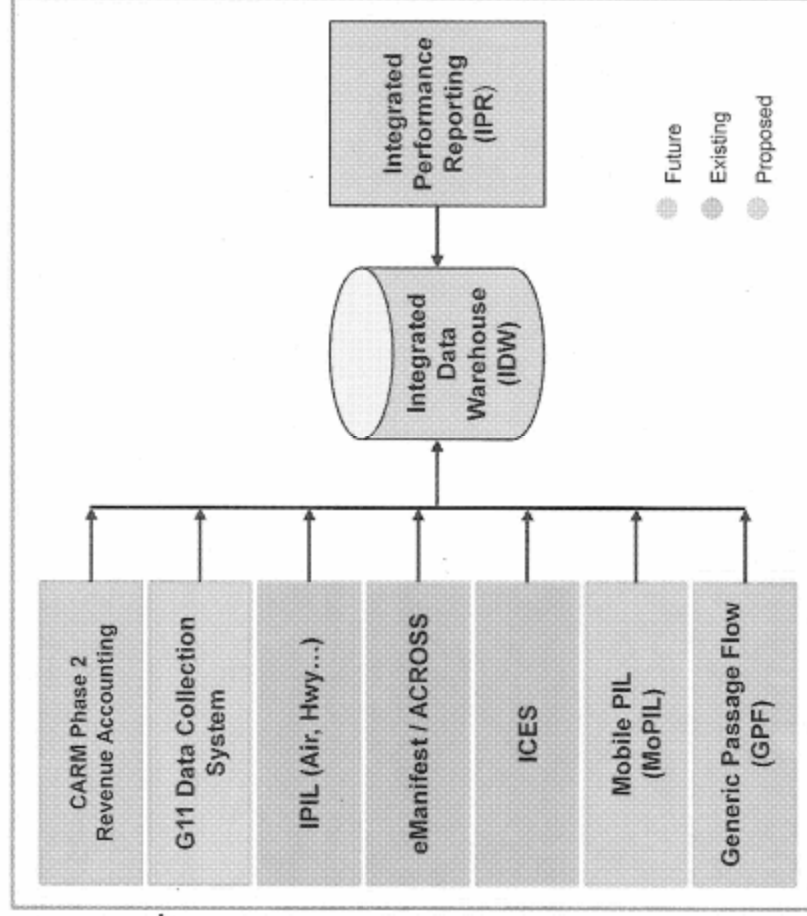
**G11 system is a key "feeder system" for integrated performance reporting.**

### Existing G11 System:

- Built in 1988 (now "End of Life", no changes possible).
- Only source for key data (e.g. total traveller volumes - 97M / year).
- Contains obsolete, duplicate, inaccurate data.

### Potential Replacement:

- Simple "data collection app".
- Facilitates consistent data entry and timely updates.
- Provides cost avoidance at POEs (less manual collection).





## Business Intelligence (ctd)

Initiative / Lead	2016-17	2017-18	2018-19	Total
<b>1. Integrated Data Warehouse</b> IS7B	<ul style="list-style-type: none"><li>Data architecture design based on common data requirements from inflight projects</li><li>Establish service oriented integrated data service delivery</li><li>Initial focus on immigration enforcement data</li></ul>	<ul style="list-style-type: none"><li>Iterative contribution through new initiatives</li><li>Begin integrated service delivery</li></ul>	<ul style="list-style-type: none"><li>Continued improvement and stabilization of integrated data services</li></ul>	
	O&M: \$100,000 (AVRR) + IT devt. cost (projects)	O&M: \$220,000 + IT devt. cost (projects)	O&M: \$220,000 + IT devt. cost (projects)	O&M: \$540,000
<b>2. Integrated Performance Reporting (IPR)</b> Programs Corporate Affairs Comptrollership	<ul style="list-style-type: none"><li>Define requirements for IPR and G11 replacement</li><li>Complete investment proposal and business case</li><li>Seek capital investment funding for 2017-18</li></ul>	<ul style="list-style-type: none"><li>Project launch and implementation</li></ul>	<ul style="list-style-type: none"><li>Project implementation and iterative delivery</li></ul>	
	O&M: \$250,000 (AVRR)	O&M: -- + capital ask (est. \$3M)	O&M: -- + capital ask (est. \$3M)	O&M: \$250,000

## Business Intelligence (ctd)

Initiative / Lead	2016-17	2017-18	2018-19	Total
3. Integration of Immigration Data Programs /STB	<ul style="list-style-type: none"> <li>Requirement definition with IRCC</li> <li>Planning and feasibility including legislation and policy assessments</li> <li>Prepare data sharing agreements</li> <li>Detention and removals reporting enhancements</li> </ul>	<ul style="list-style-type: none"> <li>Data sharing agreements</li> <li>Amend MOUs as required</li> <li>Begin data integration</li> <li>Report development on Detention and Removals analysis</li> </ul>	<ul style="list-style-type: none"> <li>Continue data integration and</li> </ul>	
	O&M: \$250,000 (AVRR) + IT devt. (IRCC)	O&M: \$125,000 + IT devt. (IRCC/CBSA)	O&M: \$125,000 + IT devt. (IRCC/CBSA)	O&M: \$500,000
4. Business Analytics Competency Centre /STB	<ul style="list-style-type: none"> <li>Develop service model</li> <li>Develop Data Acquisition plan and begin implementation</li> <li>Lead Geospatial analytics</li> <li>Develop training program</li> <li>Analytics technology roadmap and architecture</li> </ul>	<ul style="list-style-type: none"> <li>Execute Data Acquisition plan including privacy and security assessments</li> <li>Lead geospatial analytics</li> <li>Implement training program</li> </ul>	<ul style="list-style-type: none"> <li>Service refinement and stabilization</li> </ul>	
	Salary: \$100,000, 2 FTEs (E-E) O&M: \$150,000 (EE)	Salary: \$200,000, 2 FTEs O&M: \$350,000 + IT devt.	Salary: \$200,000, 2 FTEs O&M: \$350,000 + IT devt.	Sal: \$ 500,000 O&M: \$1,120,000
	Salary: \$100,000, 2 FTEs O&M: \$750,000 Total: \$850,000	Salary : \$200,000 O&M: \$695,000 Total: \$895,000 + capital	Sal: \$200,000 O&M: \$695,000 Total: \$895,000 + capital	Sal: \$ 500,000 O&M: \$2,140,000 Total: \$2,640,000 + capital



# Advanced Analytics

## Key Requirements, 2016-17:

### 1. *Operational Analytics*

- Strengthened capacity for analytics in the National Targeting Centre and intelligence operations, including irregular migration and immigration enforcement.
- Funding required for detailed planning, architecture, technology improvements.

### 2. *Program Optimization*

- Support required for Science and Engineering's predictive analytics pilots and development of recruitment strategy for data scientists.
- Funding also required for Science and Engineering work to support Entry-Exit

### 3. *Data Acquisition*

- Funding required to develop acquisition strategy (for both internal and external data), and to resolve security and privacy issues. Essential support for operational and program analytics.

### 4. *Geospatial Analytics*

- Funding required to conduct pilot in best practices within the Public Safety portfolio, and to prepare a business case and costing. to review



## Advanced Analytics (ctd)

- The CBSA is actively using data analytics to fulfill its mandate to support pre-arrival risk assessment leveraging commercial and traveller data bases, social media, geospatial information, and operational models.
- Examples include:
  - **Predictive analytics** models to improve traveller and commercial targeting and strengthen intelligence/investigation leads.
  - Analyzing **open source data** (social media) to conduct tactical inbound air traveller risk assessment for national security; incorporating text analytics (terms/phrases), image analytics, and extremist web sites as identified by Public Safety partners.
  - Using statistical analysis, **data visualization** (Geospatial, temporal) as well as other techniques
- Operations research to improve scheduling of Border Service Officers and resource allocation.





## Advanced Analytics (ctd)

Initiative / Lead	2016-17	2017-18	2018-19 +	Total
<b>1. Operational Analytics</b> <i>Operations</i> <i>ISTB</i>	<ul style="list-style-type: none"><li>• Technology optimization – leverage existing investments</li><li>• Develop requirements for operational environment</li><li>• Planning, architecture and design</li><li>• Focus on Entry-Exit ;</li></ul>	<ul style="list-style-type: none"><li>• Expansion of analytics in multiple operational lines: situational awareness, investigation, intelligence, enforcement</li><li>• Resource alignment and development of analytics expertise</li><li>• Operational analytics environment implementation</li></ul>	<ul style="list-style-type: none"><li>• Operational analytics environment implementation</li><li>• Continued workforce development and improvement</li></ul>	
	Salary: \$ 90,000, 2 FTEs (E-E) O&M: -	Salary: \$180,000, 2 FTEs O&M: \$240,000 + IT infrastructure and development cost	Salary: \$180,000, 2 FTEs O&M: \$240,000 + IT infrastructure and development cost	Sal: \$450,000 O&M: \$480,000
<b>2. Program Optimization</b> <i>Programs</i> <i>ISTB</i> <i>Human Resources</i>	<ul style="list-style-type: none"><li>• Complete predictive analytics pilots, including Entry Exit ;</li><li>• Develop recruitment strategy for data analysts, as part of CISA's People Strategy.</li></ul>	<ul style="list-style-type: none"><li>• Begin operationalizing data science advancements</li><li>• Recruit and train new data scientists</li><li>• Identify new opportunities</li></ul>	<ul style="list-style-type: none"><li>• Continued workforce development and recruitment</li></ul>	
	Salary: \$100,000, 2 FTEs (E-E) O&M: -	Salary: \$200,000, 2 FTEs O&M: \$80,000	Salary: \$200,000, 2 FTEs O&M: \$80,000	Sal: \$500,000 O&M: \$160,000



## Advanced Analytics (ctd)

Initiative / Lead	2016-17	2017-18	2018-19 +	Total
<b>3. Data Acquisition</b> ISTB	<ul style="list-style-type: none"><li>Develop strategy and plan</li><li>Prioritization of data sources</li><li>Establish task force for security and privacy impact assessments (DSO, ATIP, Programs, Operations)</li></ul>	<ul style="list-style-type: none"><li>Execution of data acquisition plan</li><li>Task force action plan - execution</li></ul>	<ul style="list-style-type: none"><li>Continued data acquisition</li><li>Continued security and privacy assessments as required</li></ul>	
	O&M: \$400,000 (AVRR)	O&M: \$200,000 + IT development cost	O&M: \$100,000 + IT development cost	O&M: \$700,000
<b>4. Geospatial Analytics</b> ISTB Operations	<ul style="list-style-type: none"><li>Review use by Public Safety partners</li><li>Prepare business case and costing</li></ul>	<ul style="list-style-type: none"><li>Architecture and design</li><li>Technology procurement</li><li>Infrastructure design and implementation</li></ul>	<ul style="list-style-type: none"><li>Implementation and delivery</li></ul>	
	O&M: \$150,000 (AVRR)	O&M: \$200,000 + technology procurement and IT devt. cost (CBSA, SSC)	O&M: \$200,000 + technology procurement and IT devt. cost (CBSA, SSC)	O&M: \$550,000
	Salary: \$190,000, 4 FTEs O&M: \$550,000 Total: \$740,000	Salary: \$ 380,000 O&M: \$ 720,000 Total: \$ 1,100,000	Salary: \$ 380,000 O&M: \$ 620,000 Total: \$1,000,000	Sal: \$0.95M O&M: \$1.89M Total: \$2.84M





## Funding Summary

	2016-17	2017-18	2018-19	Total
Data Governance	\$1,170,000	\$890,000	\$640,000	\$2,700,000
Business Intelligence	\$ 850,000	\$895,000 + capital (est. \$3M)	\$895,000 + capital (est. \$3M)	\$2,640,000 + capital (est. \$6M)
Advanced Analytics	\$ 740,000	\$1,100,000	\$1,000,000	\$2,840,000
Total	\$2,760,000	\$2,885,000	\$2,535,000	\$8,180,000



## Next Steps

- **EC decision required:**
  - Approval for proposed funding strategy, including allocations for 2016-17: AVRR (\$1.8M), Entry-Exit (\$0.7M), ISTB (\$0.25M).
- **Provide progress reports:**
  - Information Management Committee (quarterly).
  - Executive Committee (December 2016).



# Big Data at the CBSA

Preliminary Overview  
for the World Customs  
Organization

June 2016  
Programs Branch

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## 1 Introduction:

### 1.1 Background

The World Customs Organization (WCO) has declared 2016 as the year of "Digital Customs – Progressive Engagement" as a way to bring world customs organizations together and share experiences, best practices, and promote the digitization of customs processes. See Appendix A for WCO Release.

By promoting the digitization of customs, the WCO hopes to recognize that the digitization of the Customs landscape leads to improved data collection and the expanded capability to exploit data that improves processing, promotes transparency, identifies risks, and better integrates not only border processing activities but greater law enforcement activities as a whole.

The WCO has asked CBSA a fairly simple, but broad question "What does big data mean to CBSA?" in its effort to bring our experience to the table on one of the newest emerging concepts of data usage called "big data". There are three key principles of big data (Gartner, 2001):

- Volume - The quantity of generated and stored data available to base decisions on.
- Variety - The breadth of data that is available to the decision-making process.
- Velocity - The speed at which data is created and integrated into the decision-making process.

### 1.2 Methodology

As the concept of "big data" is still emerging and not necessarily well understood, the Global Border Management Data Analytics Division (GBMDA), within Programs Branch, proposed a questionnaire to the Data Analytics Working Group (DAWG)<sup>1</sup> to help answer the question "What does big data mean to CBSA?" as well as identify the current footprint of big data within the CBSA. The intention of the questionnaire was to gain insight into the understanding and execution of "big data" within the CBSA and reach a conclusion that would answer the question posed by the WCO. A high-level survey was distributed to the Advanced Analytics Sub-Working Group members, which is a sub-working group under the DAWG, and the responses compiled are consolidated in this document. The questions included in the survey are available for reference in Appendix B.

<sup>1</sup> The DAWG comprises a broad collection of directorates that are instrumental in shaping and improving the data footprint of the CBSA



## 2 Findings

### 2.1 What is big data at the CBSA?

At the CBSA, big data is understood as any work leveraging high volumes of data, including historical and transactional data. Big data is seen as a core enabler within the CBSA, supporting policy decisions and threat assessments.

The CBSA collects data from both internal and external sources. Internal data sources include (but are not limited to) transactional data, examination data, CCTV video streams, volumetric and scheduling data, commercial and traveller data. Externally, the CBSA takes advantage of open source data and external situational awareness data.

The majority of big data work currently done at the CBSA focuses on analyzing high-volume structured data, while future-facing efforts are being made to align the Agency's analytics capabilities with the broader definition of "big data", making use of not only the large volumes of data but taking into consideration variety and velocity as well and efficiently use it to address complex problems.

### 2.2 How is big data being used?

The CBSA is taking advantage of internal and external data assets to gain better insight to support its facilitation and security mandate. The National Targeting Center (NTC) is currently using big data to identify high risk travellers and goods.

The Advanced Analytics team within the Information, Science and Technology Branch (ISTB), is leading multiple big data pilot projects to enhance predictive analytics, information visualization and improve the use of the Agency's biometric data. That team benefits from access to the Science and Engineering Directorate's Experimental Computing Environment which allows the Advanced Analytics team to tailor software and hardware to any given piece of work. In addition, the team has access to the procured enterprise tools that also provide a suite of advanced data mining capabilities.

An Enterprise Data Warehouse (EDW) currently exists and brings together information from various data sources of mainly internal data for data analytics. The EDW is currently being used to support our targeting operations in the interdiction of travellers and goods prior to their arrival at a port of entry (POE).

In the commercial realm, project funding has served as a catalyst to advance the analytics within the CBSA. Advanced analytics are used in the commercial program to identify and intercept high risk shipments and improve targeting.

### 2.3 Challenges

The current landscape of big data at the CBSA is truly just beginning and the common understanding and execution of big data generally involves putting together large volumes of data from disparate sources. Further leveraging big data will require addressing challenges



linked to data acquisition, workforce development, data management, and systems infrastructure.

Accessing data in a timely fashion has been identified as one of CBSA's biggest issues with respect to big data. Privacy limitations across jurisdictions make data acquisition for horizontal reporting difficult. In some cases it can take years to receive a sizeable dataset for experiment purposes.

Unlocking the potential for big data usage will require strategically developing our workforce by identifying high potential data analysts that can be hired early in their career and grow professionally inside the Agency. It will also require enhancing current employee skills and capacity through further training and access to analytical tools.

Developing a centralized and specialized function for coordinating and facilitating data and systems acquisition is required to make processes more efficient. Currently, this function is decentralized which leads to inefficiencies due to a lack of standardization of processes. The Agency intends to operationalize the Business Analytics Competency Centre (BACC) within the ISTB to act as the single point of contact to lead and facilitate the implementation of data analytics services. Efforts to improve data management through implementing data governance and stewardship will also alleviate some related issues in the mid-term.

The current enterprise approach to system infrastructure makes it difficult to expand on the analytical capacity of the CBSA. Further integration of data across the Agency is necessary to improve our ability to risk assess both goods and people. The CBSA must move towards an Integrated Data Warehouse (IDW) to replace the existing EDW.

## 2.4 Moving Forward

To gain maximum value from the Agency's big data efforts, work must be done to promote further integration of data. The Agency must also focus on minimizing barriers to access and broadening the EDW.

Development is continuing on the existing EDW to integrate additional sources and types of information. Very recent additions to the EDW include open-source data sets that will improve our ability to risk assess both goods and people. Additional projects are in the exploratory phase that will bring together biometric screening, facial recognition, automated lie detection, and predictive modelling to the traveller screening process and feed into our big data footprint.

By integrating large datasets into the EDW and expanding access, the CBSA will gain greater insight into big data. This will lead to actionable predictions on high-risk goods and people, including previously unidentifiable relationships.

Moving forward, the Agency must treat data as a corporate asset if we are to leverage big data to its full potential. In an effort to formalizing data governance within the Agency, governance bodies such as the Information Management Committee (IMC) and the DAWG have been established which constitute a positive step towards recognizing the importance of data in the Agency.



### 3 Conclusion - What does “big data” mean to CBSA?

Big data presents an emerging opportunity for the CBSA to fulfill its mandate in a more efficient and effective way. By taking stock and making use of all available, relevant sources of data in near real-time, the CBSA will be in a better position to make informed, evidence based decisions that will improve facilitation and security processes at the ports of entry. While the value of big data is acknowledged within the advanced analytics community within the CBSA, leveraging big data to its full potential will require addressing some key challenges at all levels of the Agency.

#### Contacts

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 Director, Data Analytics  
 Programs Branch

Erica Ren  
 Director, Open Government and Data Services  
 Information Science and Technology Branch





## 4 Appendix A – WCO News Release

Source: <http://www.wcoomd.org/en/media/newsroom/2015/november/world-customs-organization-declares-2016-to-be-the-year-of-digital-customs.aspx>

### World Customs Organization declares 2016 to be the year of Digital Customs

The Secretary General of the WCO, Kunio Mikuriya, announced today that 2016 will be dedicated to promoting the digitalization of Customs processes under the slogan "Digital Customs: Progressive Engagement." WCO Members will have the opportunity to showcase and further promote their use of Information and Communication Technologies (ICT).

The term Digital Customs refers to any automated or electronic activity that contributes to the effectiveness, efficiency, and coordination of Customs activities, such as automated Customs clearance systems, the Single Window concept, electronic exchange of information, websites to communicate information and promote transparency, and the use of smart phones.

This new era of Digital Customs has transformed the way that Customs operates. Ultimately, it ensures progression – the enhanced ability of Customs Administrations to communicate, process goods, receive and exchange information, coordinate border activities, collaborate on law enforcement actions, and promote transparency. Improved technologies thus have the ability to positively impact and transform the Customs landscape through:

- Improved compliance as a result of increased access to regulatory information and functions, as well as services, on the part of all international trade stakeholders; • Faster clearance times for legitimate trade;
- Enhanced coordination between Customs units, as well as between Customs and other border regulatory agencies at the national and international level;
- Increased transparency in regulatory processes and decision-making;
- The use of performance measurement to improve Customs procedures and levels of integrity, such as through the techniques presented in the WCO Performance Measurement Contracts (PMC) Guide;
- Enhanced detection of irregularities and illicit consignments through the collection and analysis of data.

Such positive outcomes will contribute significantly towards the realization of Customs' objectives, including improved revenue collection, border security, the collection of trade statistics, and trade facilitation. "Border agencies are increasingly embracing digitalisation to enhance their effectiveness and efficiency.

The WCO has an extensive portfolio of instruments and tools to support WCO Members in their efforts to further adopt Digital Customs," said WCO Secretary General Kunio Mikuriya.

"Over the course of 2016, I invite all WCO Members to promote and share information on how they are implementing and using digital technologies to advance and achieve their objectives," Mr. Mikuriya added.



The WCO's annual theme will be launched on International Customs Day, which is celebrated annually by the global Customs community on 26 January in honour of the inaugural session of the Customs Co-operation Council (CCC) which took place on 26 January 1953.

The WCO invites the Customs community to mark 26 January 2016 in their diary.



## 5 Appendix B - Questionnaire

The purpose of this questionnaire is to solicit input for a WCO request to CBSA on our development, use, and challenges of big data, with regards to policy and IT.

2016 has been named the year of "Digital Customs – Progressive Engagement" by the WCO and in an effort to promote CBSA and share best practices and procedures with other WCO members CBSA has been asked to provide some introductory information on our "big data" footprint.

To help showcase CBSA's big data technical and application expertise and how it integrates into our big data network please provide feedback, where applicable, to the following questions.

1. What does big data mean to your area of CBSA?
2. How, in your area is CBSA applying the characteristics of big data?
3. What sources of data does your area consume from CBSA?
4. What sources of data does your area consume from external sources? (provide examples and how they integrate with internal CBSA data, please)
5. Does your area consume any sources of unstructured data?
6. What big data technical solutions are currently being employed in your area? (trial or established)
7. What are some ways you feel CBSA could improve its execution of big data?
8. What is that largest difficulty your area faces with respect to big data



Canada Border  
Services Agency

Agence des services  
frontaliers du Canada



Executive Committee  
November, 2015

## Data Analytics

Programs Branch  
Information Science and Technology Branch

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Canada



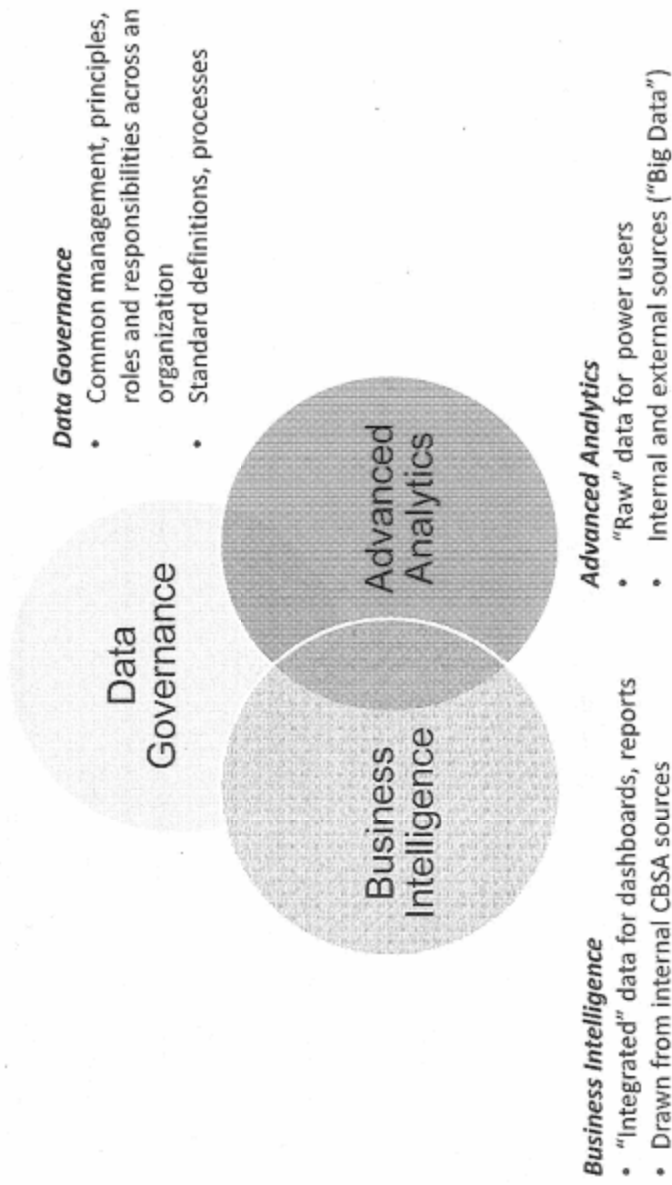
## Purpose

- Outline a vision for CBSA's Data Analytics Initiative to transform the Agency's capacity for data governance, business intelligence, and advanced analytics.
- Seek approval for a 3-year action plan and governance framework.



## What is "Data Analytics"?

- Data Analytics is an integrated approach to gathering, organizing, and using our data.





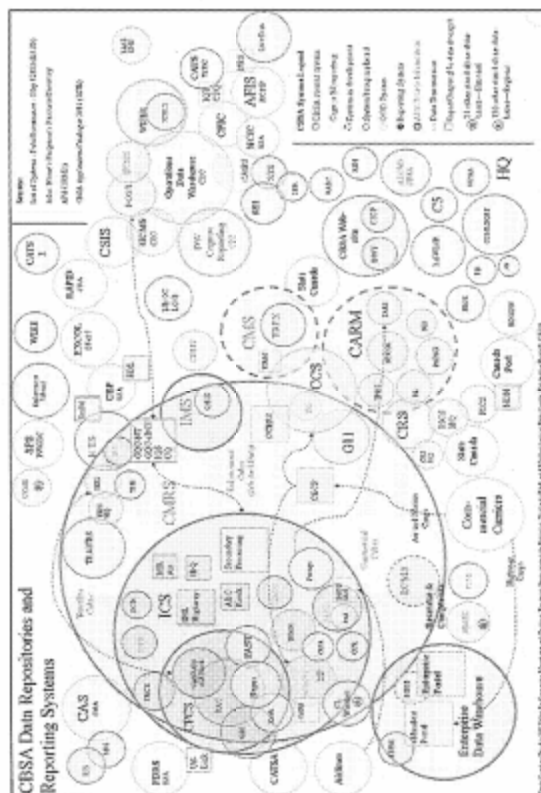
## Strategic Objectives

The Data Analytics Initiative's goals are closely aligned with the Agency's strategic objectives:

- **Securing Canada's borders**
  - *Strengthened capacity to use analytics for targeting, intelligence, operational awareness*
- **Streamlining the border experience**
  - *Improved access to quality data for program design, client service, and revenue generation*
- **Management excellence**
  - *More timely, reliable, and accessible business intelligence for performance reporting and decision-making*
  - *Integrated financial and operational data for resource allocation modelling*
  - *Secure and efficient release of datasets*

This initiative is driven by the need to build a culture of analytical excellence. It seeks to mitigate the "Information Integrity" risks highlighted in the CBSA's Enterprise Risk Profile.

### CBSA Data Repositories and Reporting Systems



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## Why We Need Data

### Budgeting and Forecasting

Conduct budgeting and forecasting analysis for better resource management and ensure required resources are in place to meet future demands.

### Performance Management

Align operational and program performance indicators, and measure and monitor program effectiveness through tracking those indicators.

### Statistical Reporting

Perform statistical analysis on trends in program performance over an extended period of time to drive deeper understanding of key areas, e.g. traveller volumes, revenue collected.

### Operational Reporting

Leverage data in a consistent and efficient manner to gain a clear understanding of "what happened" and "what is happening" across the CBSA to better manage day-to-day operations.

### Operational Intelligence

Integrate internal and external data to conduct advanced analytics in real time (e.g. predictive analytics) in support of targeting, intelligence, enforcement, and threat/risk assessment.

### Program Optimization

Apply analytics to improve program design and transformation, e.g. resource allocation, trade fraud detection, revenue management.



## Many Functions Involved

### ISTB

- Enterprise Architecture and Information Management – provides expertise on IM, architecture and analytics
- Science and Engineering (Lab) – data scientists provide expertise on analytical methods
- Service Lifecycle Management – service delivery, portfolio managers; solution development and support

### Operations

- National Border Operations Centre – applied analytics in support of targeting, situational awareness, operational intelligence
- Regional Corporate Program Support Divisions – regional performance reporting and analysis
- Intelligence – Data Exploitation Unit

### Comptrollership

- Strategic Transformation and Renewal – Cost Factor Manual; Agency Comptroller - Planning, Budgeting, and Forecasting Project

### Programs

- Data Fusion Centre - data governance
- Performance Reporting Unit - data extraction and reporting service, Consolidated Management Reporting - training and support
- Program Integrity unit - risk assessment
- Performance and Analytics units

### Corporate Affairs

- Corporate Planning and Reporting – corporate performance reporting (DPR), Performance Measurement Framework, benefits management
- Audits, evaluations, ATIP, media

### Human Resources

- HR Programs – workforce analysis (e.g. demographics, time utilization) and link to People Strategy



## Progress to Date

- Data Fusion initiative launched by PPC in December 2014.
- Committee and working groups established in February 2015.
  - Focus on governance, collaboration, enterprise basics
- Maturity assessment in April 2015 found Agency is below the industry average, with some significant gaps including:
  - No enterprise business analytics strategy
  - Operational intelligence data and tooling challenges
  - Performance reporting highly fragmented and manual
- Advances made in managing data
  - eManifest, Entry-Exit, CARM and other projects building data analytics components
  - National Border Operations Centre use of API/PNR, cargo and release information, social media
  - Science and Engineering team piloting the use of predictive analytics for Traveller targeting
  - Web Dashboard prototype for user-friendly access to data
  - Open Government Implementation Plan, release of six datasets



## A New Strategy

- An integrated, enterprise approach based on increasing our maturity above industry standard over next three years.

### *Data Governance*

- **Governance Structure.** Provide an Agency-wide approach to decision-making on data issues.
- **Stewardship.** Designate data stewards and centres of expertise, with clear roles and responsibilities.
- **Standards and policies.** Implement common definitions, data quality processes, and an enterprise data model.

### *Business Intelligence*

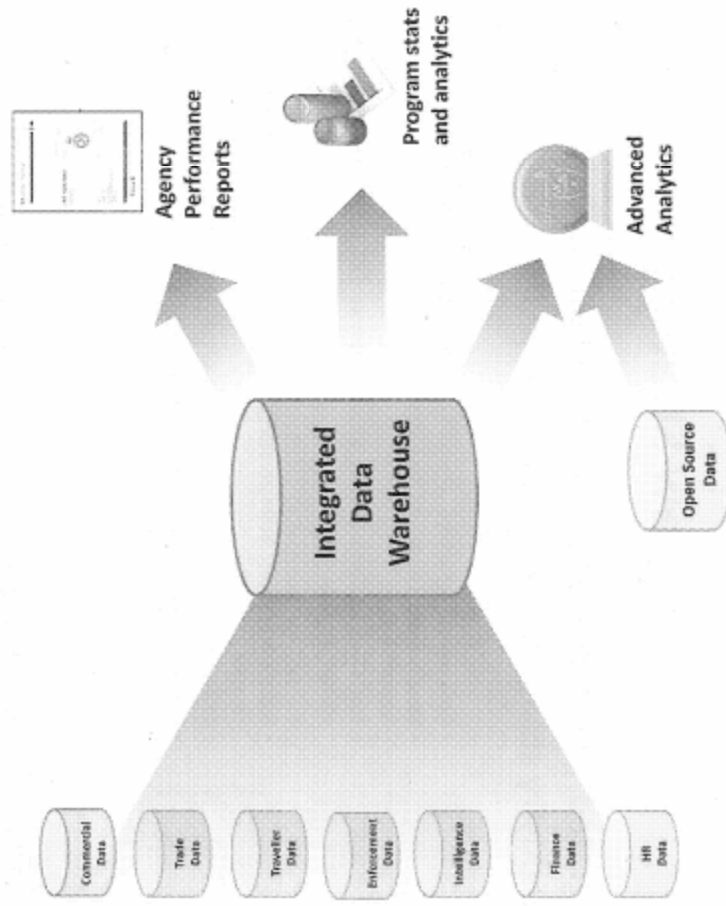
- **Data Integration.** Build an integrated data warehouse, drawing on key data from multiple sources.
- **Self-service.** Enable quick access to key reports and data.
- **Competency Centre.** Create a Business Analytics Centre within ISTB for cross-functional support and coordination.

### *Advanced Analytics*

- **Data acquisition.** Provide analysts with access to key data from internal and external sources.
- **Emerging tools and techniques.** Explore potential for predictive analytics, visualization, and other advanced tools.
- **Workforce development.** Recruit and develop high-skilled analysts.



# The Model of the Future





# How We Get There

## From

### Data Governance

- Unclear roles and responsibilities
- Siloed operational systems and databases
- No common definitions and naming conventions (*e.g. dates, gender, location, "traveller"*).
- Lack of consistent guidance on data entry and extraction, with few exceptions

## To

- Data Governance roles, policies, standards are clearly documented and conform with privacy, security, and other requirements
- Enterprise data model aligns business definitions across Agency.
- Management oversight in place for key data integrity issues (*e.g. "closing the loop"*)
- Data integrity issues are prioritized and resolved

### Business Intelligence

- Producing reports is labour-intensive, prone to error and difficult to repeat
- Manual integration from variety of sources.
- Gaps in data collection
- Data housed in CIC Data Warehouse.
- Financial, human resource, and operational data not integrated
- Overlap and duplication in analytics work undertaken by major projects

- Integrated Data Warehouse automates PMF, APS, and Cost Factor Manual.
- User-friendly access to reports and power users have self service
- Operational, financial, and human resource data are integrated into data warehouse
- Full integration with Service Life Cycle Management Framework



## How We Get There (continued)

### From

#### Advanced Analytics

- Challenges in acquiring internal Agency data due to regulatory constraints (e.g. information security, IT security, and privacy)
- Data challenges--such as slow refresh rates, poor data quality, and access to adequate tools--make it difficult to integrate data for risk assessment and targeting
- Lack of highly trained "data scientists" to conduct the necessary research and perform advanced analytics work
- Program areas require analysts and managers with sufficient "data literacy" to provide guidance to the specialists

### To

- Efficient processes for data acquisition from CBSA systems where appropriate.
- Access to "raw", nearly real-time data for operational intelligence, targeting, and situational awareness.
- Access to external sources of relevant data (e.g. social media).
- Sustainable core of data scientists with strong links to business functions.
- Data specialists in centres of excellence within each Branch



## Proposed Governance

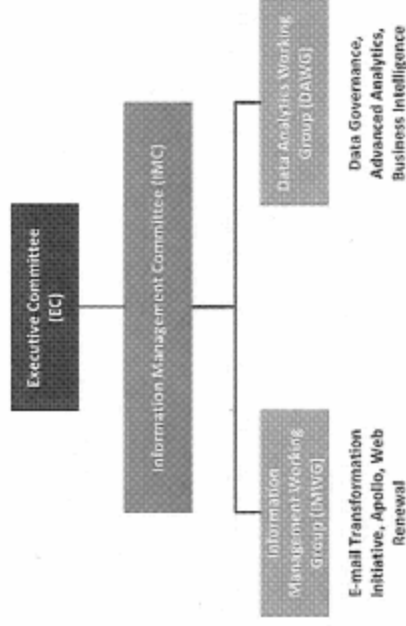
### Key Roles

**Vice President, ISTB.** TBS-mandated role as Information Management Senior Official. Duties include delegated authority to approve release of Open Government datasets.

**All Branches.** Shared responsibility to manage Agency's data as a corporate asset. ISTB manages enabling technology and processes.

### New "Information Management Committee"

- Co-chaired by two VPs [TBD].
- Approves strategies, policies, and processes for management of information and data.
- Collaborates with other VP committees.
- DG representatives from all Branches.
- Working groups and consultative network.
- Merges existing Data Fusion and IM Initiatives steering committees.







## Business Case

- To date, the direct costs have been covered by Programs Branch and ISTB.
- Funding on project-by-project basis received from multiple sources, such as Refugee Reform, eManifest, and Entry-Exit.
- However, full business case to be developed to better track and manage all investments and results.
- Funding will be required, including from existing resources, for:
  - Salary and O&M annually to strengthen data governance and support Open Government
  - Expanding our capacity for advanced analytics
  - Capital funding to launch the Integrated Data Warehouse
- Business case to be completed by Spring 2016 for EC consideration.
- Integrated into the Agency's business plans and priorities.



## Action Plan

FY 2016-17

FY 2017-18

FY 2018-19

### Management

- **\*\*Complete business case** for next three years.
- **Alignment with Agency business planning.**
- **Monitor progress,** report to PPC/EC every 6 months on progress.
- **Intake Process.** Define intake process for new requirements under SLMF.

- Annual planning cycle
- Monitor progress, report to PPC/EC every 6 months on progress.
- Annual planning cycle
- Monitor progress, report to PPC/EC every 6 months on progress.

### Data Governance

- **\*\*Establish Information Management structure, data stewardship network, and policies.**
- **Data quality assessment,** with a special focus on Immigration enforcement and G11 system.
- **\*\*Launch Enterprise Data Model** to provide integrated information architecture.
- **\*\*Open Government.** Complete initial assessment of datasets for releasability.

- Enhance stewardship network, policies, procedures.
- Implement recommendations of data quality assessment.
- Complete initial Enterprise Data Model.
- Complete data inventory and Open Government assessment.
- Complete policies and procedures.
- Complete "high priority" data quality fixes.
- Begin next phase of Enterprise Data Model.
- Monitor Open Government processes and complete annual assessment.

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## Action Plan (continued)

	FY 2016-17	FY 2017-18	FY 2018-19
<b>Business Intelligence</b>	<ul style="list-style-type: none"><li>• <b>**Integrated Data Warehouse.</b> Launch initial phase of an integrated data warehouse, drawing on key performance reports.</li><li>• <b>Web Dashboard.</b> Complete first phase of APEX web dashboard, automating key elements of the Traveller APS Dashboard.</li><li>• <b>Immigration Data.</b> Complete high level requirements for immigration enforcement data, and linkages to CIC's Data Warehouse.</li><li>• Create a <b>Business Analytics Competency Centre</b> in ISTB to provide support and guidance to users.</li></ul>	<ul style="list-style-type: none"><li>• Implement second phase of data warehouse.</li><li>• Continue to build the web dashboard as the "front end" of the data warehouse.</li><li>• Complete data "pipe" between CIC and CBSA.</li><li>• Recruit, train, and develop "power users".</li><li>• Implement "self service tools"</li></ul>	<ul style="list-style-type: none"><li>• Implement integrated data warehouse for core data.</li><li>• Fully integrate financial and operational reporting.</li><li>• Continue to develop business analytics skills and tools.</li></ul>
<b>**Short term priority.</b>			



## Action Plan (continued)

	FY 2016-17	FY 2017-18	FY 2018-19
Advanced Analytics	<ul style="list-style-type: none"><li>• <b>**Strategy.</b> Develop multiyear strategy and high level requirements for data acquisition and advanced analytics.</li></ul>	<ul style="list-style-type: none"><li>• Collaborate with BS/FCC and OGD partners to review best practices.</li></ul>	<ul style="list-style-type: none"><li>• Monitor and report on results.</li></ul>
	<ul style="list-style-type: none"><li>• [REDACTED]</li></ul>	<ul style="list-style-type: none"><li>• Assess pilots and address lessons learned.</li></ul>	<ul style="list-style-type: none"><li>• Evaluate results. Develop plans for next phase.</li></ul>
	<ul style="list-style-type: none"><li>• <b>Visualization.</b> Complete first phase of Information Visualization tool (ISTB-led).</li></ul>	<ul style="list-style-type: none"><li>• Implement visualization tool.</li></ul>	<ul style="list-style-type: none"><li>• Expand access to visualization tool.</li></ul>
	<ul style="list-style-type: none"><li>• <b>Analytical capacity.</b> Recruit and train "data scientists".</li></ul>	<ul style="list-style-type: none"><li>• Implement new tools and capabilities.</li></ul>	<ul style="list-style-type: none"><li>• Implement across all programs and internal services.</li></ul>
**Short term priority.			



## Next Steps

- **Decision required:**
  - Approve strategy and governance framework
- **Align with Agency Priorities in FY 2016-17**
  - Integrated Business Plan, Capital Plan, etc.
  - People Strategy
- **Progress Report every 6 months**
  - Program Policy Committee (*March 2016*)
  - Executive Committee (*June 2016*)

# Canada Border Services Agency

## Big Data Assessment – Executive Review

March 28<sup>th</sup>, 2014



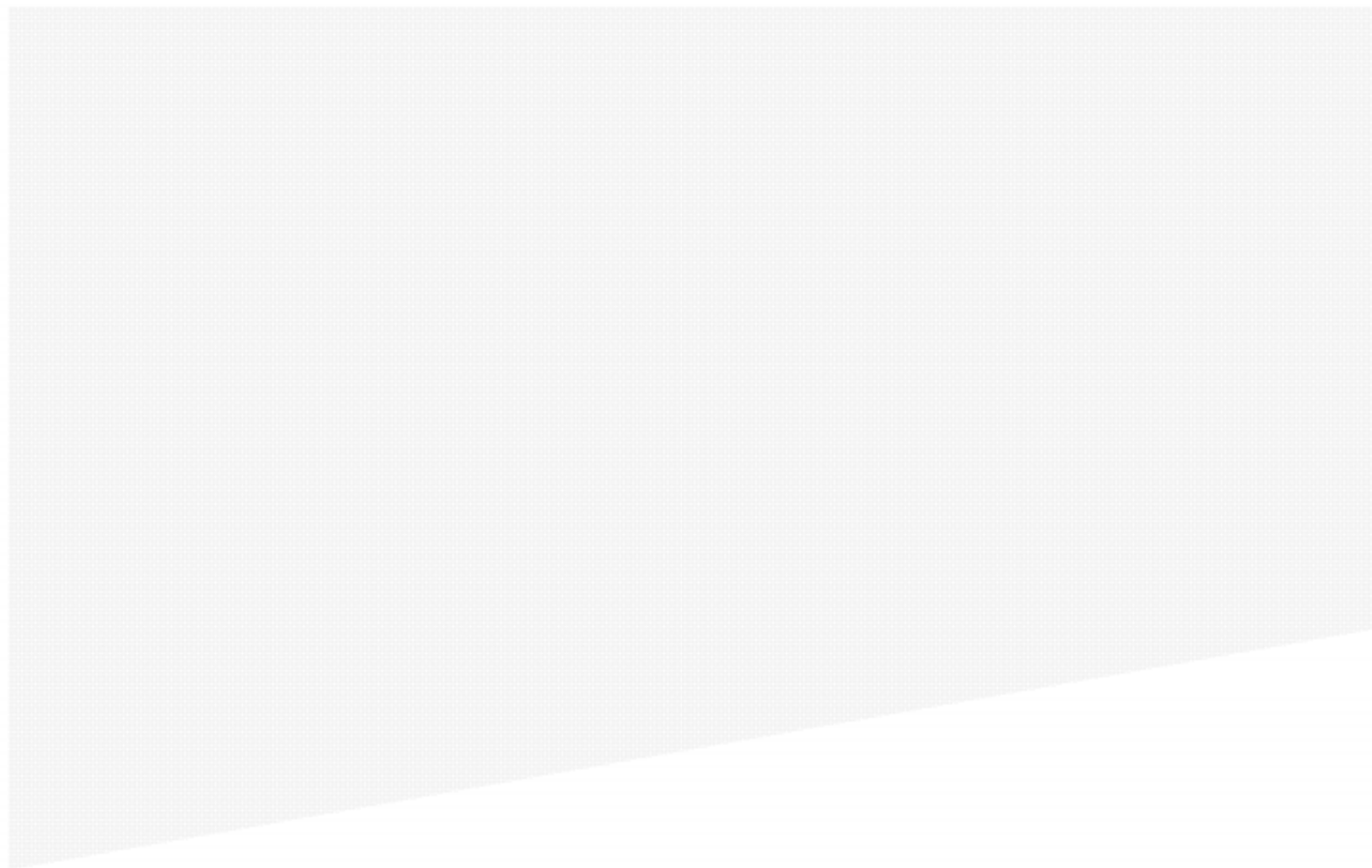
Building a better  
working world

# Agenda

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- ▶ Executive Summary
- ▶ Detailed Recommendation
- ▶ Recommendations Prioritized and Organized into Roadmap
- ▶ Next Steps / Conclusion

## Executive Summary





# Big Data Assessment Overview

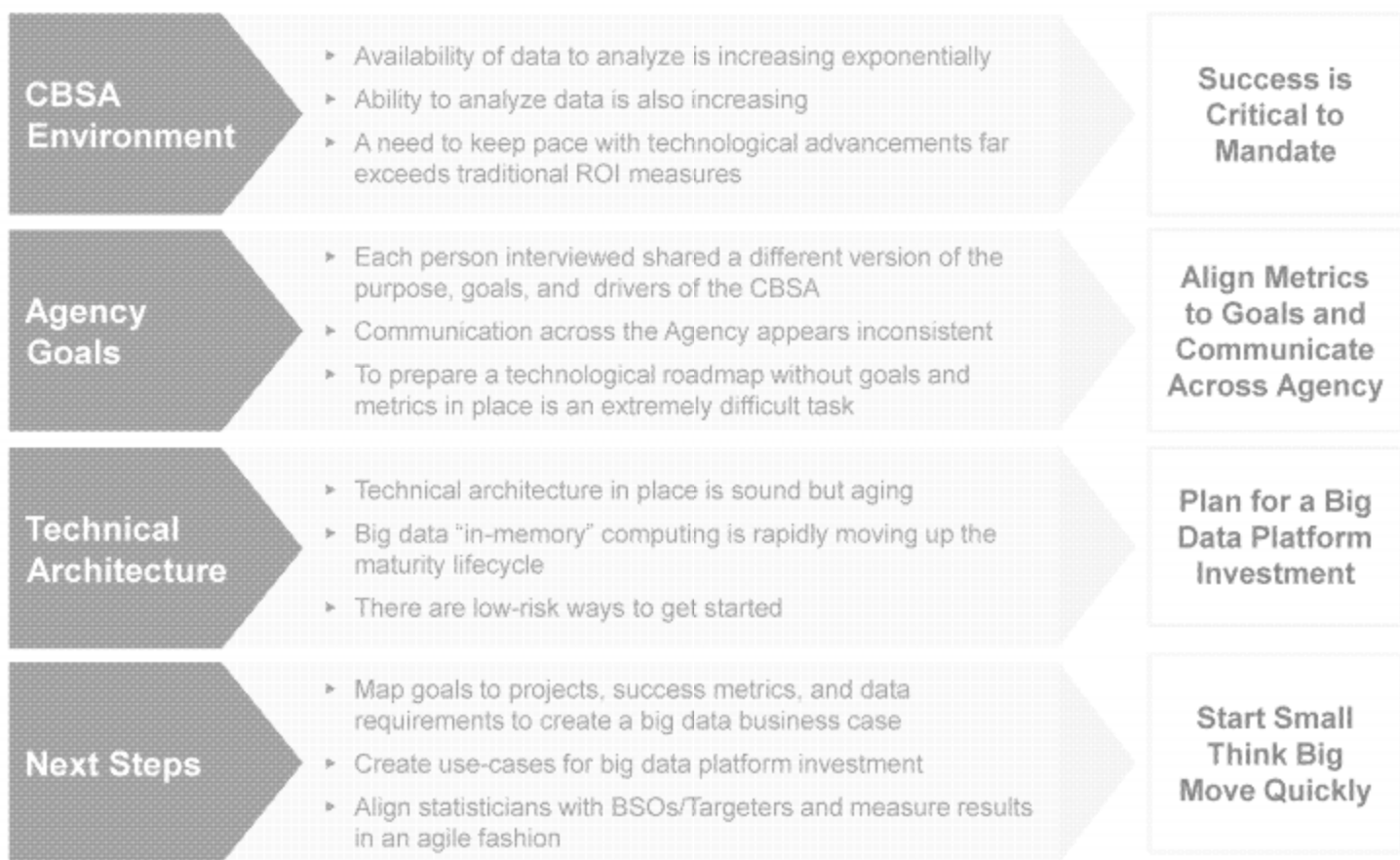
## Approach

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- ▶ Interviews conducted with stakeholders across the Canada Border Services Agency (CBSA) to better understand current processes, technologies, and skill sets across five key areas:
  1. Agency Drivers
  2. Data Strategy
  3. Analysis and Insight
  4. Drive Change
  5. Measure Results
- ▶ Compared CBSA's current processes, technologies, and skill sets across the five key areas to common big data practices observed by EY as well as industry research
- ▶ Developed and prioritized recommendations aimed at helping the CBSA direct investment to organize and prepare for the demands of tomorrow across each key area
- ▶ Created a high-level roadmap outlining immediate next steps

## Executive Summary

### Big Data Assessment Key Findings



## Canadian Border Services Agency

### How is the role of the CBSA going to evolve?

There are a number of driving forces which are changing the landscape of CBSA.

Today	Driving Forces	Tomorrow
Border Services Officers manually inspect most travelers and commercial goods crossing the border at designated points-of-entry	The <b>accuracy of insight across large data sets</b> is helping to focus the number of investigations required	Low risk travelers and the appropriate commercial goods will continue to expect to flow faster across the border
Border Services Officers rely on intuition and experience to determine whether further inspection is necessary	The <b>speed of insight</b> is helping to better identify threats	Border Services Officers will rely on real-time information as well as intuition to determine whether further inspection is necessary
Biometrics and other unstructured data sources are not widely used to help with verification	<b>New technology</b> and data architecture philosophies are making it <b>easier and cheaper</b> to store unstructured data elements	Biometrics and other unstructured data sources will be routinely captured, stored, and merged to help identify threats
Entities who pose risk to Canada are becoming more sophisticated and not bound to legislation, org charts, technology limitations or red tape	Access to advanced analytic skill sets and are <b>hard to acquire</b> and even <b>harder to retain</b>	CBSA's data infrastructure needs to be robust enough to meet future demands and attract and retain top talent

### How does the CBSA organize and invest to prepare for the demands of tomorrow?

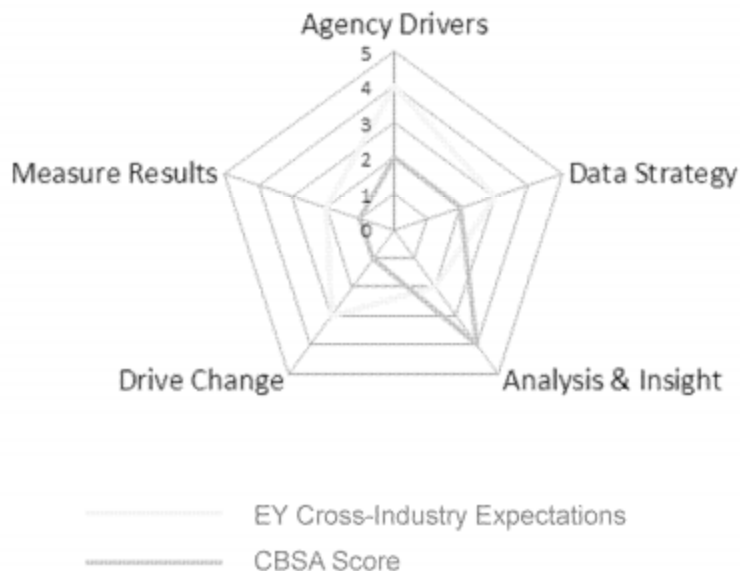
## Common Practices and Initiatives Across Other Commercial Industries

<b>Organizational Drivers</b>	<ul style="list-style-type: none"><li>➤ Map goals to projects, projects to success metrics, and projects to data requirements</li><li>➤ Create data lineage reports</li><li>➤ Develop questions, which if answered through data analysis, would improve success metrics, and help achieve goals – creating use cases</li></ul>
<b>Data Strategy</b>	<ul style="list-style-type: none"><li>➤ Recognize that existing architecture is unable to keep up with the volume, velocity, and variety of data, which is now available for analysis</li><li>➤ Evaluate the benefits of big data platforms and beginning to build business cases to support the investment and implementation</li><li>➤ Align their existing teams to support a formal data governance framework</li></ul>
<b>Analysis and Insight</b>	<ul style="list-style-type: none"><li>➤ Create data driven organizations where mathematicians/statisticians/data scientists are positioned at the core</li><li>➤ Invest in mathematicians/statisticians/data scientists to transform data into insight</li><li>➤ Create open communication channels between statisticians and frontline employees</li></ul>
<b>Drive Change</b>	<ul style="list-style-type: none"><li>➤ Create an "Analytic Culture of Excellence" to strengthen synergies and improve economies of scale across data sets, technologies, and human capital</li><li>➤ Develop common intake mechanisms for prioritizing analysis</li><li>➤ Develop outtake mechanisms for transforming insight into action</li></ul>
<b>Measure Results</b>	<ul style="list-style-type: none"><li>➤ Prepare work efforts in an agile manner and capture benefits for each piece of analysis conducted</li><li>➤ Recognize that not every analysis will yield results</li><li>➤ Ensure that Sr. level executives down to frontline employees are linked by common goals, and have similar access to success metrics</li></ul>

## Assessment Overview

We looked across five areas to determine where investment should be directed to help organize and prepare for the demands of the future

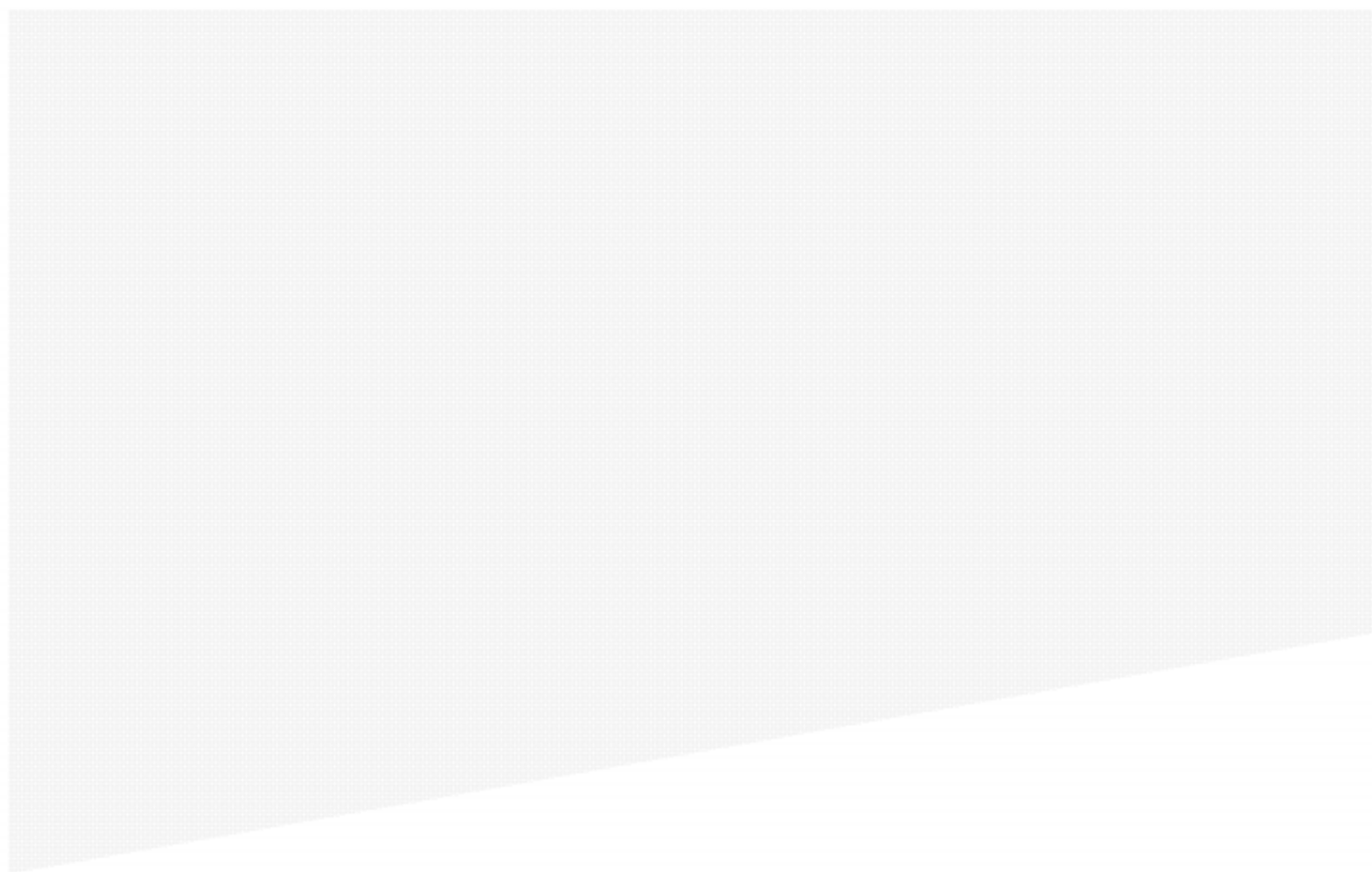
### Big Data Assessment Scores



#### Primary Focus of Assessment:

1. **Agency Drivers** – Evaluated how the future goals and metrics have been documented and articulated across the Agency
2. **Data Strategy** – Evaluated how the architecture, data availability, security, and technology stack contribute toward the needs of the Agency
3. **Analysis and Insight** – Evaluated which methods and tools have been deployed to translate data into insight and review the inventory or reports and on-going analysis
4. **Drive Change** – Evaluated the processes, mechanisms and program governance used to make change within the Agency once insight has been uncovered
5. **Measure Results** – Evaluated how each of the current initiatives and key performance indicators are tracked and viewed by senior leadership

## Detailed Recommendations



## Agency Drivers

### Evaluation of goals, metrics, and communication

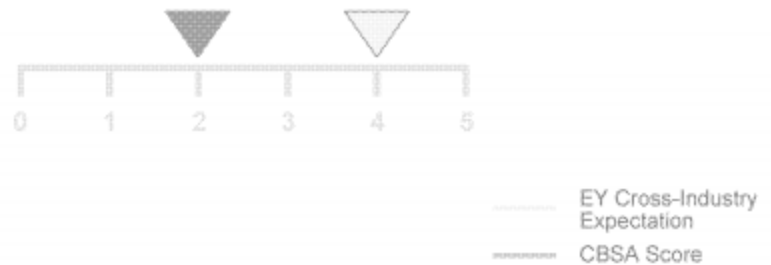
#### Current Situation:

- Enterprise goals and metrics seem straight forward, but are interpreted and reported differently across the Agency
  - Safety, Security, Savings
  - Security, Facilitation
  - Four ISTB Performance Pillars
  - Four Business Lines (Corporate, Traveler, Commercial, Common)
- Work efforts and goals are separated by project charters and budgets
- Consistent communication across the Agency is fractured

#### Issues:

- Since strategic Agency objectives are loosely mapped to projects and data needs it makes it difficult to create a go-forward big data technology plan
- Day-to-day tactical priorities often get in the way of larger strategic opportunities
- The Agency has been challenged leveraging economies of scale across projects including: technologies, data and skill sets

#### Ranking:



#### Recommendations:

1. Map current projects to strategic goals, associated metrics, and data needs. (Data lineage reports)
2. Clearly identify and prioritize the questions which need to be answered to help meet the objectives of the CBSA.
  - *This should also serve as the introduction to big data use case development*

## Data Strategy

### Evaluation of data architecture, data availability, technology stack

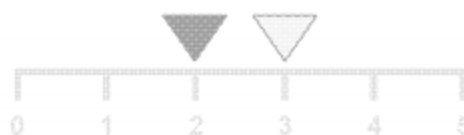
#### Current Situation:

- ▶ Data architecture meets the needs of today's CBSA
- ▶ Data architecture falls considerably short meeting the needs of the future CBSA
- ▶ Combining unstructured data sources to help identify "things" of interest is limited
- ▶ Unstructured biometric information is becoming more easily available and searchable
- ▶ The time to address real-time data processing is now (*in-memory computing*)

#### Issues:

- ▶ Long-term strategic roadmap for data architecture is not in place
- ▶ Considerable amount of time (months) is required to pull (ETL) data sets used for analysis
- ▶ CBSA is not taking full advantage of all the unstructured data sources available (biometrics, publicly available data, visual) in real-time

#### Ranking:



----- EY Cross-Industry  
Expectation  
----- CBSA Score

#### Recommendations:

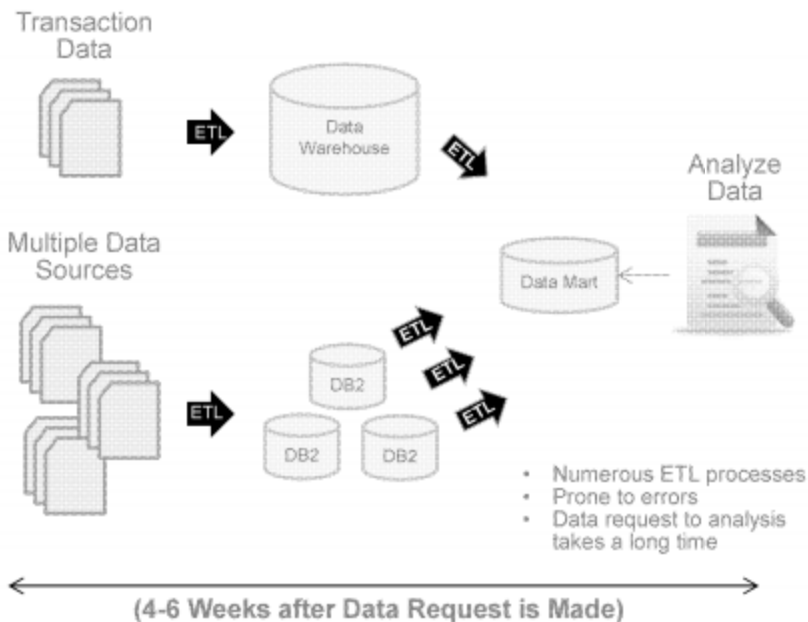
1. Develop uses cases to support the need for a "big data" platform
2. Conduct "big data" vendor analysis in conjunction with known requirements
3. Create "big data" technology roadmap
4. Implement "big data" platform in a sidecar environment
5. Migrate sample set of data onto the platform



## Data Strategy

Big data is more than the 4Vs. "Big data" also represents the way data is stored, updated, and accessed

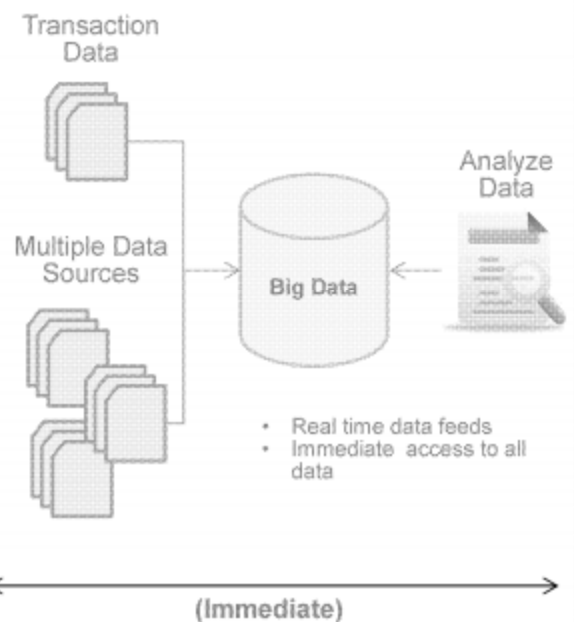
### Traditional Way of Analyzing Data:



#### Risks:

- Data needs to be passed multiple times to allow for analysis
- Insight can only be gleaned for data requested
- Architecture is not built for speed

### Future Way of Analyzing Data:



#### Benefits:

- Reduces redundant data
- Accelerated access to data
- Gives end-users the ability to perform "exploratory analytics"

# Data Strategy

## Evaluation of data governance

### Current Situation:

- Data governance framework is **not** in place today
- However, there is a project in flight aimed at creating a data governance framework for a subset of the existing data architecture

### Issues:

- The data governance framework being created today to manage the existing architecture will need to be modified when the move to a "big data" platform takes place
- There will be a skill gap to overcome when implementing the data governance framework for the new architecture

### Ranking:



———— EY Cross-Industry  
Expectation  
———— CBSA Score

### Recommendations:

1. Create a formal Data Governance Framework for the new architecture:
2. Conduct a policies standards and procedures analysis for the new architecture including:
  - Data Management
  - Data Quality
  - Data Usage
  - Issue Management
3. Conduct a skill assessment to determine which skills need to be acquired and which employees need to be trained
4. Create organizational structure to ensure consistency and define roles and responsibilities

## Analysis and Insight

### Evaluation of how data is transformed into insight

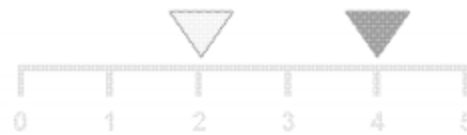
#### Current Situation:

- There is a strong statistical team in place with a background in theory and applied statistics.
- The team has access to the right technologies (R, SAS, SPSS)
- Work is prioritized by project codes but there is a lot of work "in the margin"
- These types of skill sets are in high demand across the market

#### Issues:

- Each set of analysis requires a request to the data architects which in turns requires multiple manual processes to pull the data used by the advanced analytic team. These processes are:
  - Prone to error
  - Take a significant amount of time
  - Limits the ability of the advanced analytic team to conduct "deeper" analysis
- Retaining top talent in an antiquated/frustrating environment is a major risk.

#### Ranking:



----- EY Cross-Industry  
Expectation  
----- CBSA Score

#### Recommendations:

1. Work with the advanced analytic team to help identify use cases for "big data" platform investment
2. Create and test scenarios based on data scientist intuition and experience – "Agile"
3. Interview Border Service Office/Targeters to generate hypothesis
4. Create direct communication path between the BSOs and the advanced analytic team

## Drive Change

Evaluation of the processes, mechanisms and program governance methods used to make change within the Agency

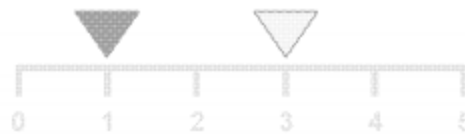
### Current Situation:

- Work efforts to analyze data are predominantly funded through "projects"
- There are limited projects focused on data exploration
- Each project has unique requirements in terms of data, analytic skill sets, and project governance

### Issues:

- Since each project brings forth its own set of requirements many redundancies exist: including:
  - Core data
  - Analytic data sets
  - Databases
- Real time analytic initiatives do not follow a formal project management process – Rapid response teams are not in place
- Ad-hoc analytic initiatives are not being tracked as a portfolio of investments

### Ranking:



----- EY Cross-Industry Expectation  
----- CBSA Score

### Recommendations:

1. Create an analytic culture of excellence focused on limiting redundancies and leveraging economies of scale
2. As new data architecture is implemented the speed at which insight is created will dramatically increase. As a result, it becomes necessary to create an Agency wide transformation model that quickly converts insight into action.

*\* It will become increasingly important to link ad-hoc analytic initiatives to measurable changes in the Agency*

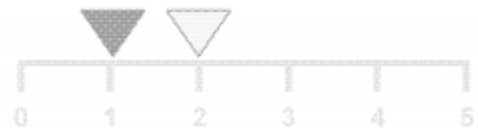
## Measure Results

Evaluation of how each of the current initiatives and key performance indicators are tracked and viewed by senior leadership

### Current Situation:

- ▶ There are a number of key metrics tracked across the Agency
- ▶ Analytic initiatives "in the margin" are not being measured or tracked back to overall benefits

### Ranking:



### Issues:

- ▶ Key metrics are not mapped downstream to data attributes
- ▶ Benefits are tracked by long-term projects not in an agile portfolio basis
- ▶ Advanced analytics are not performed on existing projects to predict the likelihood of success or failure

—— EY Cross-Industry Expectation  
—— CBSA Score

### Recommendations:

1. Design high level benefit tracking report which outlines how each project contributes to each metric
2. Begin to use analytics to predict the likely outcomes of future projects

## Recommendations Prioritized and Organized into Roadmap



## Point Solution vs. Foundational Capability

Some solutions are categorized as point solutions aimed at recognizing value quickly, others are classified as foundational capabilities

Point Solution	Foundational Capabilities
Shorter Project Duration Department Focus Short Term Benefits	Longer Project Duration Agency Focus Long Term Benefits
<b>Agency Drivers</b> <ul style="list-style-type: none"><li>Map projects to goals, metrics, data needs (Data lineage)</li><li>Identify and prioritize which questions need to be answered through data analytics</li></ul> <b>Data Strategy</b> <ul style="list-style-type: none"><li>Develop use cases designed to support the investment of a big data platform</li><li>Conduct "big data" vendor analysis</li><li>Create "big data" technology roadmap</li><li>Create a formal data governance framework for the new architecture</li><li>Conduct a policies standards and procedures analysis for the new architecture including data management, quality, usage and issue management</li><li>Conduct a skill assessment for data governance framework</li><li>Create organizational structure for data governance framework</li></ul> <b>Analysis &amp; Insight</b> <ul style="list-style-type: none"><li>Help develop use cases designed to support the investment of a big data platform</li><li>Create and test scenarios based on data scientist intuition and experience</li><li>Interview Border Service Office to generate hypothesis</li><li>Create direct communication path between the BSOs and the advanced analytic team</li></ul> <b>Drive Change</b> <b>Measure Results</b> <ul style="list-style-type: none"><li>Begin to use analytics to predict the likely outcome of future projects</li></ul>	<b>Data Strategy</b> <ul style="list-style-type: none"><li>Implement "big data" platform in a sidecar environment</li><li>Migrate sample set of data onto the platform</li></ul> <b>Analysis &amp; Insight</b> <b>Drive Change</b> <ul style="list-style-type: none"><li>Create an analytic center of excellence</li><li>Create Agency wide transformation model</li></ul> <b>Measure Results</b> <ul style="list-style-type: none"><li>Design high level benefit tracking report which outlines how each project contributes to each metric.</li></ul>

# Prioritization Quadrant

Each recommendation relative to each other

## Recommendations:

### Agency Drivers

- 1. Map projects to strategic goals, metrics, data needs
- 2. Identify and prioritize which questions need to be answered through data analytics

### Data Strategy

- 3. Develop use cases designed to support the investment of a big data platform
- 4. Conduct "big data" vendor analysis
- 5. Create "big data" technology roadmap
- 6. Create a formal data governance framework for the new architecture
- 7. Conduct a policies and procedures gap analysis for the existing architecture and create one for the new architecture.
- 8. Conduct a skill assessment for data governance
- 9. Create organizational structure for data governance
- 10. Implement "big data" platform in a sidecar environment
- 11. Migrate sample set of data onto the platform

### Analysis & Insight

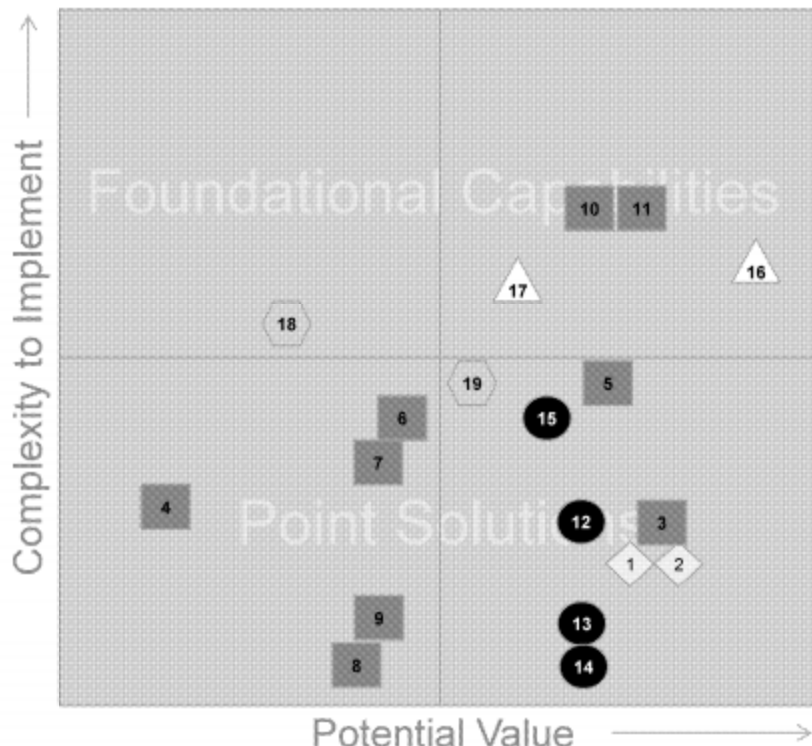
- 12. Help develop use cases designed to support the investment of a big data platform
- 13. Create and test scenarios based on data scientist intuition and experience
- 14. Interview Border Service Office to generate hypothesis
- 15. Create direct communication path between the BSOs and the advanced analytic team

### Drive Change

- 16. Create an analytic culture of excellence
- 17. Create Agency wide transformation model

### Measure Results

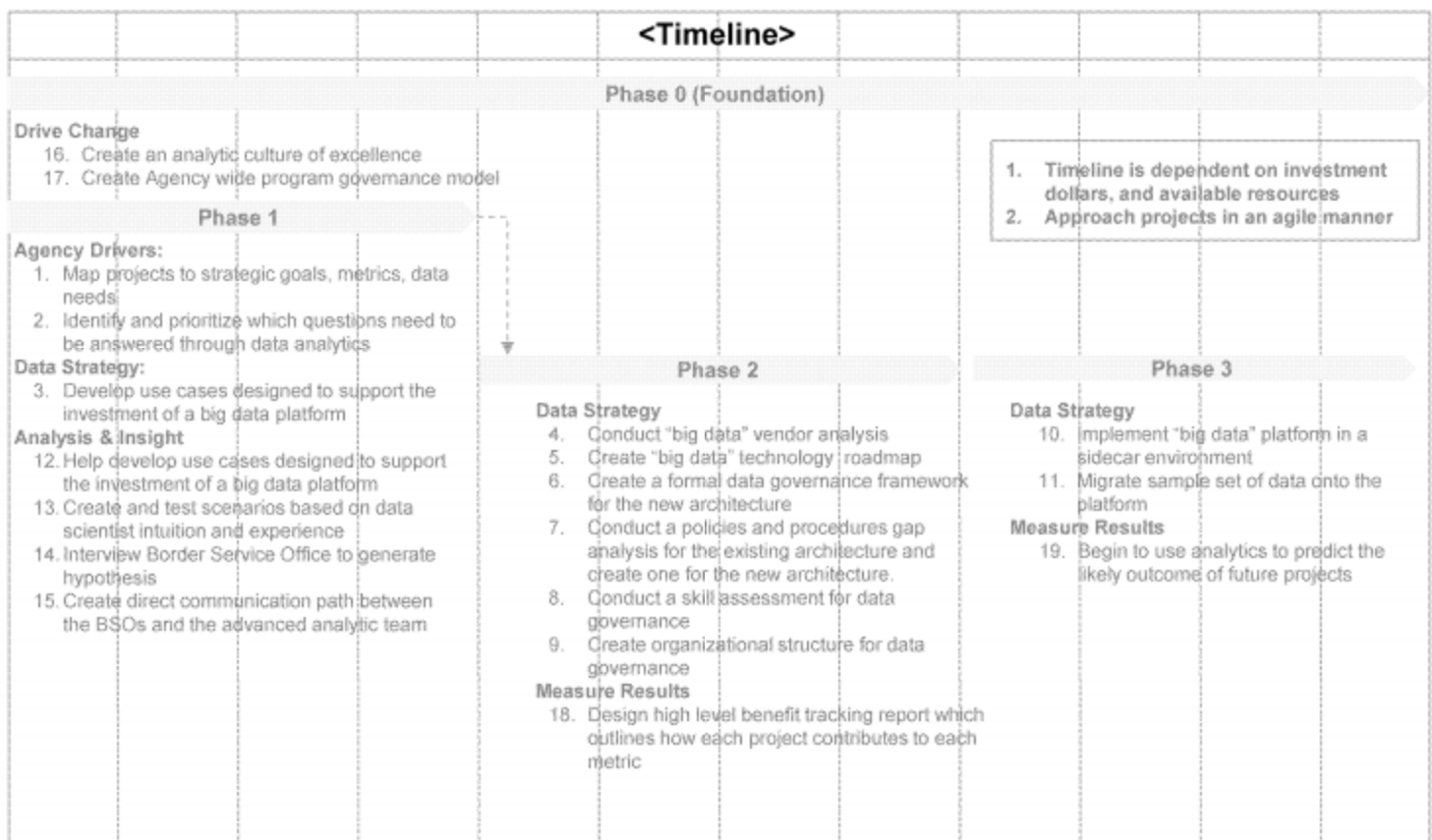
- 18. Design high level benefit tracking report which outlines how each project contributes to each metric
- 19. Begin to use analytics to predict the likely outcome of future projects



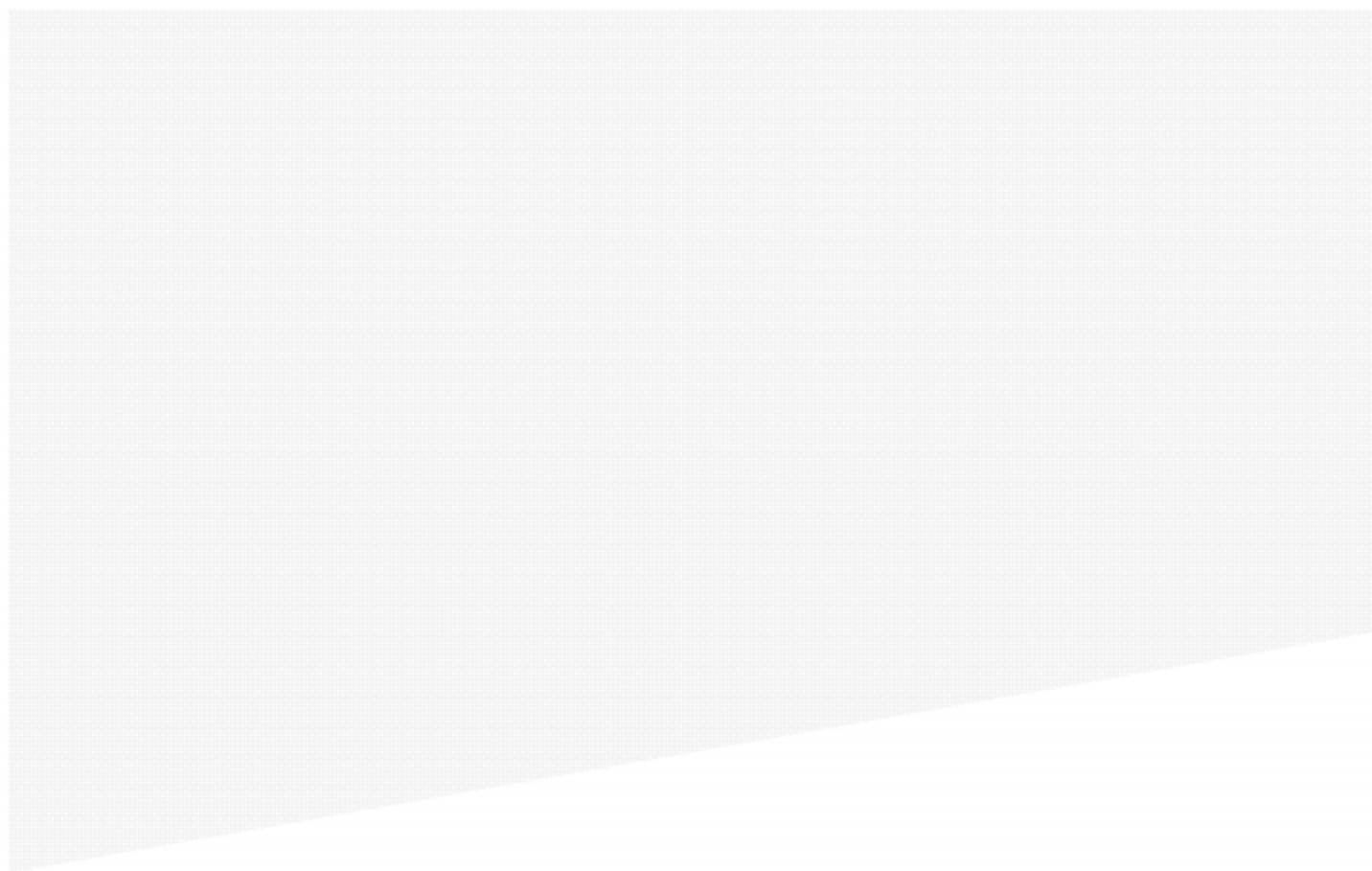


# Roadmap

High level roadmap illustrating work efforts



## Next Steps / Conclusion



## Next Steps

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Canada Border  
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# **CBSA Enterprise Information Management (EIM) Strategy 2016 - 2018**

Apollo ID: 3664138

Revision: 2016-06-28

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# 1 Setting the Stage

The exponential growth of information, the multitude of in-house systems that generate it and the inherent difficulties in capturing the information resources' actual context (i.e. metadata) has made managing the Agency's information increasingly difficult.

While methodologies, systems, tools and techniques for managing information have evolved over the last decade (within government and beyond), they still fall short of successfully harnessing one of the Agency's critical resources, *information*.

The current strategy aims to initiate a much-needed paradigm shift of traditional Information Management approaches and solutions. The shift can be understood through the following table:

	Current	Future
<b>Role of CBSA's Enterprise Information Management (EIM) division</b>	Compliance-focused, primarily reactive involvement in business processes and operations.	Proactively involved with business clients (as early as planning stage), focused on improving inefficient "information flows".
<b>Approach to deliver services</b>	Mandated & difficult enterprise-wide solutions. <i>("Thou shalt" mindset)</i>	Relevant, stable and efficient services and tools to business client. <i>("Business comes first" mindset)</i>
<b>Valuing corporate information</b>	All unstructured information treated as equally important, making it difficult to focus resources and efforts strategically.	Risk-based approaches successfully used to apply 80/20 principle. <i>(Focus efforts on high-value resources)</i>
<b>Achieving proper information lifecycle management</b>	Reliance on unproven and limited functionality as proposed by content management system vendor.	Innovative use of a wide spectrum of solutions to iteratively and progressively develop the Agency's capability to perform information lifecycle management. <i>(slowly move yardstick forward)</i>
<b>Methodology</b>	Waterfall-centric, multi-year, high-risk.	Incubation, progressive release, early adopters, starting with small changes, building up.
<b>Information Resources of Business Value</b>	Spread across multiple unstructured repositories, low-visibility, out-of-context. Low usability of the information.	Centralized, highly integrated enterprise content management platform, metadata-rich. High business usability of information.



## 2 Executive Summary

### 2.1 Context

The present strategy:

- Builds upon the foundational work of the previous deliverable “Information Management 2015-2018: A Strategy to Unlock Information Value in the CBSA”<sup>1</sup>;
- Provides a tactical view of required initiatives to implement the vision;
- Provides an updated look at the pressures and internal/external drivers of the Agency
- Includes recommended actions resulting from the Agency internal audit of IM (2015-2016);
- Aligns with the Government of Canada Enterprise Information Management (EIM) Strategy.

### 2.2 Vision

The Agency's mission is to ensure Canada's security and prosperity by managing the access of people and goods to and from Canada. Its vision is an integrated border agency that is recognized for service excellence in ensuring Canada's security and prosperity.

In support of this departmental vision, the Enterprise Information Management (EIM) program is working towards a “New Information Ecosystem” that has the following vision:

*Unlock the value of our information by ensuring all CBSA staff and stakeholders have seamless access to the reliable, timely and complete information they need to perform their duties.*

To achieve this vision, the Enterprise Information Management (EIM) division is proposing the following four Strategic Directions:

---

<sup>1</sup> “A Strategy to Unlock Information Value in the CBSA” *Apollo #935722*



EIM Strategic Direction to achieve Vision

## 2.3 Motivation

Undertaking the proposed initiatives within this strategy will yield positive results and mitigated risk:

### 1. Provide benefits for key stakeholders

- For the Agency's workforce:
  - ✓ An electronic environment that brings efficiency, synergy and collaboration in the workplace;
  - ✓ Increased worker satisfaction;
  - ✓ Modern electronic work environment consistent with current social and business platforms;
  - ✓ Timely access to complete and authoritative information for service delivery.
- For the CBSA:
  - ✓ Efficient, integrated and secure electronic processes and information flows;
  - ✓ Higher quality of information that can be safely shared, used and re-purposed;
  - ✓ Reduce the amount of stockpiled and mostly unusable electronic information and physical paper boxes;
  - ✓ Financial savings through higher efficiency processes, better life-cycle management, dissemination, and elimination of legacy information;
  - ✓ Information appropriately managed, secured and discoverable to support operations, legal and regulatory requirements.
- For Canadians:
  - ✓ Access to publically available datasets;

- ✓ Efficient government services;
- ✓ Higher control and protection of personal information;
- ✓ Contribute to sustainable development objectives.

## **2. Respond to current pressures affecting the Agency**

- Internal Drivers
  - ✓ Aging and deficient information flows and processes;
  - ✓ Born "Unmanaged";
  - ✓ Information Stockpiling;
  - ✓ Lack of oversight on all of the Agency's information holdings;
  - ✓ Limited ability to "crowdsource" and engage the workforce;
  - ✓ Limited Reach of Information Management support services;
  - ✓ Difficulty implementing efficient Electronic Records Management processes.
- External Drivers
  - ✓ Treasury Board Secretariat (TBS) GC Enterprise IM Strategy and Policy on Information Management;
  - ✓ TBS's Directive on Recordkeeping prescribed level of maturity;
  - ✓ TBS's Directive on Open Government;
  - ✓ LAC issuance of Records Disposition Authorities (RDA) and information disposition requirements;
  - ✓ LAC no longer be accepting information resources of enduring value created in paper format after 2017;
  - ✓ As of July 2015, LAC no longer stores records that are not of enduring value. Boxes of paper have been returned to the originating departments, including CBSA.

## **3. Responds to the Agency internal audit of IM (2015-2016)**

- The audit reported several findings and issued the following recommendations:
  - ✓ Further define and communicate IM responsibilities and accountabilities;
  - ✓ Implement and communicate standard IM tools, guidance and best practices across the Agency;
  - ✓ Develop and implement Agency-wide operational and human resource plans for IM; and
  - ✓ Monitor and Report IM on a regular basis.

## 2.4 Strategic Response

In response, the EIM organization will take concrete actions. It recommends taking the following steps:

- ✓ Undergo transformational activities to better position EIM in meeting challenges; and
- ✓ Adopt and invest resources in the four proposed Strategic Directions and resulting tactical initiatives.

### EIM Transformation




At the core of the re-alignment of the EIM Division's vocation, lies the need to refocus efforts and resources towards modernizing and improving IM's ability to facilitate Agency "information flows". These transformational activities will be an integral part of the IM Strategic Roadmap.




The strategy recommends the following transformational activities:

- ✓ Perform IM Environment Scan (External and Internal);
- ✓ Develop Information Management Service Model ;
- ✓ Harmonize IM Functions across the Agency;
- ✓ Develop HR Plan and Investment proposal;
- ✓ Develop Training & Development Plan.

### Strategic Directions

The following strategic directions help us understand and organize Strategic and Tactical efforts:

Strategic Direction	Goal
 CBSA's information is <b>Managed Responsibly</b>	Facilitate user and management responsibilities through the creation of an information accountability framework that directs the use of Apollo for creating, using, disseminating, storing and disposing of information (c.g. Lifecycle Management).

	CBSA's information is <b>Created and Resides</b> in a managed Eco-system	Continue Agency adoption of Apollo, increase management of email business information and decommissioning of network drives in support of Agency business and alignment to GC.
	Leverage Data to <b>Measure and Improve</b> program delivery	Mature the Agency's capacity for data governance, business intelligence, and advanced analytics to drive better risk management, enforcement and decisions.
	<b>Connect and Empower</b> the workforce to succeed	Action organizational culture change through communications, marketing, and workshops to facilitate the sharing of information and knowledge as a strategic asset for effective border management.

### Strategic Roadmap

The EIM organization proposes a multi-year roadmap to fulfill the strategic vision for the Agency's new Information Ecosystem. See [Appendix A](#) for the complete roadmap.

## 3 Background

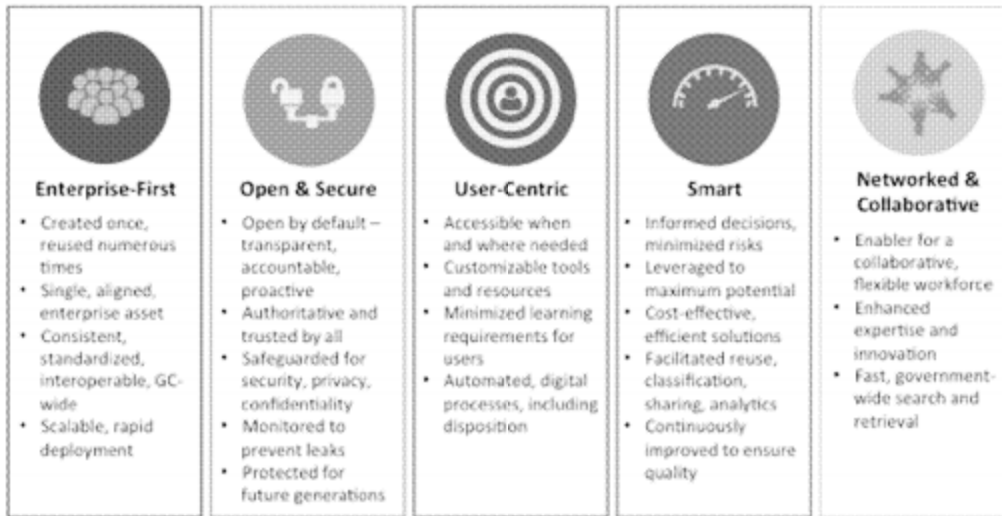
This iteration of the CBSA Information Management Strategy builds upon the foundational work of the previous deliverable *"Information Management 2015-2018: A Strategy to Unlock Information Value in the CBSA"*<sup>2</sup>. While aligning with the stated goals and framework, this version provides a tactical roadmap to realizing the strategic direction of Information Management at the CBSA.

## 4 Guiding Principles

Guiding principles represent the philosophy that guides the Agency's Enterprise Information Management organization throughout all circumstances, irrespective of changes in its goals, strategies, type of work, or management filter for decisions making.

<sup>2</sup> *"A Strategy to Unlock Information Value in the CBSA" Apollo# 935722*

In defining the latest strategic direction, CBSA EIM observes and adopts principles defined in the Government of Canada Enterprise Information Management Strategy, as follows:



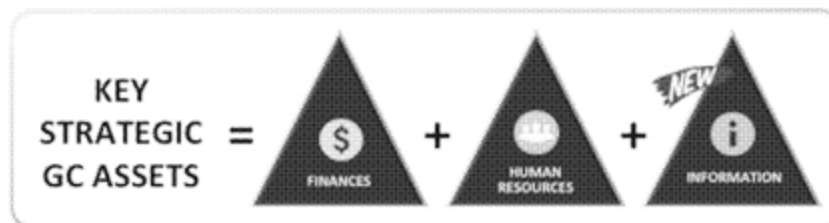
*GC Enterprise Information Management (EIM) Guiding Principles*

## 5 Value Proposition

### 5.1 Information as a Strategic Asset

Information is a business resource (*like Human Resources and Finance*). Not managing information is not a viable option:

- Information can *enable* us and *overwhelm* us. There is such a thing as “Too much information”.
- Everything we do* within the Agency *starts* with information and generates more *information*.
- The Agency renders decisions every minute using “information”



*TBS Vision of GC Strategic Assets*

## 5.2 Benefits

In working towards this vision, the Agency and its workforce can expect to see several benefits:



Users

- An electronic environment that brings efficiency, synergy and collaboration in the workplace;
- Increased worker engagement and satisfaction;
- Modern electronic work environment consistent with current social and business platforms; and
- Timely access to complete and authoritative information for service delivery.



Agency

- Efficient, integrated and secure electronic processes and information flows;
- Higher quality of information that can be safely shared, used and re-purposed;
- Reduce the amount of stockpiled and mostly unusable electronic information and physical paper boxes; and
- Information appropriately managed, secured and discoverable to support operations, legal and regulatory requirements.

## 6 Impetus for change

### 6.1 Current State

The Agency has a relatively young IM program (6 years old) and like most of OGDs, recent investments have been made towards compliance to the TBS Recordkeeping Directive and establishing the technical infrastructure for supporting tools. The time has now come to shift focus to enabling the Agency's programs and business lines.

While basic IM services are in place, transformation is still required to establish IM as a *foundational business support service*.



Key Strategic GC Assets (TBS)

As stated in the Government of Canada Enterprise Information Management Strategy: "**Information**", like

**financial and human resources** represents a critical strategic asset without which federal programs and services could not be delivered.”

Significant resources are dedicated to increasing the maturity of HR and financial management across the Government of Canada. Similarly, an enterprise-wide effort and commitment to effective IM is needed to maximize the value of information as a strategic asset.

## 6.2 Internal Drivers

As demonstrated in the root cause analysis (*see Appendix B*), the Agency can report the following internal pressures:

### **Aging and deficient information flows and processes**

The Agency’s current information ecosystem lacks several core capabilities and integration to properly assist our business lines in generating, consuming and purging information in a cohesive, sustainable and efficient manner. This creates large information sets that represent considerable risks and manual effort to manage over time.

### **Born "Unmanaged"**

Too much of our information is “born unmanaged” due to the lack of contextual information (e.g. metadata, description, context). This contextual information can come from various sources such as host systems/applications, parent process, manually input by end user, default values, etc. Without contextual information, as the information ages, it becomes near impossible to manage. An efficient information organization must leverage all opportunities to foster metadata-rich information as relying on end-users to manually describe information rarely yields consistent and acceptable results. This creates a situation where keeping and duplicating everything forever becomes the only safe option.

### **Information Stockpiling**

There appears to be no solution in sight to end stockpiling of electronic and paper information. Paper based information, especially, is ineffective, inaccessible, slows down our business processes and is not easily re-usable. As more pockets of information are kept for long periods of time, there is a high possibility that we lose track of them entirely (e.g. creator of information leaves the Agency, systems or processes are superseded without proper migration or disposition of information, etc.). Without the proper ownership and oversight strategy, an organization can therefore quickly lose sight of large collections of information (electronic and paper).





**Lack of oversight on all of the Agency's information holdings**

The Agency is in possession of significant amounts of orphaned and unmanaged information holdings, some of which are decades old. These holdings are discovered on an adhoc bases and likely only represent a small portion of our holdings. A formal and thorough approach to tracking our information resources must take place. Information also exists in multiple unmanaged repositories within the Agency and beyond (e.g. Global Case Management System – GCMS – hosted by IRCC). The Agency must be rigorous and work with IRCC and other partners to ensure shared information is managed properly and readily available to meet CBSA business requirements.

**Limited ability to “crowdsource” and engage the workforce**

We are not currently positioned to offer an engaging and collaborative electronic environment to leverage the workforce's collective input, organizational knowledge and abilities (e.g. crowdsourcing, capturing and re-using knowledge, etc.). Ensuring information in all formats is available as a business resource will increase efficiency and productivity while also supporting knowledge transfer of corporate memory.

**Limited Reach**

Enterprise Information Management (EIM) is not sufficiently represented and integrated within portfolios to play a proactive oversight role and provide foundational business support.

**Difficulty implementing efficient Electronic Records Management processes**

The approach and solution to information lifecycle management in an electronic document and records management environment that has been promoted at the GC level has very limited success overall (e.g. at the GC level). The model itself is being rethought from the ground up in order to find a definitive solution to managing our departmental information.

**6.3 External Drivers**

In addition to internal pressures departments and agencies are expected to comply and policies and directives related to information management:

- Treasury Board Secretariat (TBS) has provided guidance by publishing the GC Enterprise IM Strategy and a Policy on Information Management;
- TBS's Directive on Recordkeeping dictates a prescribed level of maturity in all departments and agencies;
- TBS's Directive on Open Government which requires departments and agencies to maximizing the release of Government of Canada open data (structured data) and open information (unstructured documents and multi-media assets);
- LAC issue Records Disposition Authorities (RDA) which enable government institutions to dispose information resources no further business value and requires them to transfer records with enduring value;
- LAC have stated that they will no longer be accepting information resources of enduring value created in paper format after 2017;
- As of July 2015, LAC no longer stores records that are not of enduring value. Boxes of paper are being returned to the originating departments.

#### **6.4 Agency internal audit of IM (2015-2016)**

The CBSA participated in a horizontal internal audit of IM carried out in 2015-2016 by the Office of the Comptroller General (OCG). IM was ranked as a high audit priority in the OCG's risk-based audit planning process because it is fundamental to all aspects of government programs and services, supports informed decision-making, efficient and effective service delivery, and is critical to achieving goals and mandate of the government.

The audit has identified that the Agency has governance and some monitoring frameworks in place to support IM; however, IM is currently delivered as a number of initiatives instead of an Agency-wide program. As a result, there is an ongoing risk that IM will not be integrated as a foundational business support for the Agency's activities. Opportunities exist to enhance roles and responsibilities, accountabilities, procedures, and reporting and monitoring practices for IM.

The audit highlighted the following key findings:

- Governance committees exist and are comprised of management that has the ability to influence IM initiatives. While roles and responsibilities were defined and documented, additional communication is required to ensure that all stakeholders are aware of their responsibilities.
- IM accountabilities were established for IM committees, the executive level and some functional communities, but not for all employees with IM responsibilities.

- Policies, guidance, tools and training were developed and accessible to employees. Opportunities exist to further implement and communicate standard IM tools, guidance and best practices across the Agency to support the consistent implementation of IM.
- At the time of the audit, operational and human resources plans to support IM were under development with a draft anticipated for September 2016.
- The current monitoring and reporting practices for IM were limited in scope. Expanding activities to monitor and report on IM is needed to support oversight and the identification of issues requiring corrective action.

The findings noted above confirm that ongoing effort is required to address the gaps identified in the 2011 horizontal internal audit of IM related to capacity and change management.

It further made the following recommendations:

- Further define and communicate IM responsibilities and accountabilities;
- Implement and communicate standard IM tools, guidance and best practices across the Agency;
- Develop and implement Agency-wide operational and human resource plans for IM; and
- Monitor and Report IM on a regular basis.

## 7 EIM Response

### Direction

To respond to these pressures, the EIM organization will take concrete actions. The following strategic directions help us understand and organize these efforts:



*CBSA IM Strategy - Strategic Directions*

## 7.1 EIM Transformation

To position itself to deliver on these actions and to better meet the new “information needs” of the Agency, EIM should consider undertaking an internal transformation.



### **Transform & Adapt**

At the core of this re-alignment of the EIM Division’s vocation, lies the need to refocus efforts and resources towards modernizing and improving the Agency’s “information flows”. These transformational activities will be an integral part of the IM Strategic Roadmap

### 7.1.1 Modernized IM Skills & Competencies

With the evolving challenges associated with managing electronic information, core competencies and knowledge base of EIM resources should follow suit. The agency’s need for information services goes beyond traditional recordkeeping. EIM should invest in cultivating and acquiring modern and multi-dimensional skills to best support its business clients:

#### **Key Skills**

- Business Analysis

- Process re-engineering
- Enterprise Content Management & information lifecycle management
- Information Architecture & Design
- Collaboration patterns and best practices
- Electronic Disposition Reporting and processes
- Change Management & Communication skills
- Presentation and Negotiation skills

### **Knowledge Areas**

- Understanding of critical information flows of the Agency
- Agency's repositories, authoritative system of records
- Present and future capabilities of the Agency's information ecosystem
- Corporate metadata models and taxonomies
- Information Governance and delegation structures

### **7.1.2 Transformation Activities**

#### **Perform IM Environment Scan (External and Internal)**

- Conduct environmental scan to identify gaps in current IM services and verify alignment with new Treasury Board GC IM Strategy (2016) *(In support of IM MRAP 2.1 – 30/10/2016) (2 months)*
- Engage Business Units via the IM Working Group, in the context of influencing the strategic direction and identifying challenges in information process, compliance and management. *(In support of IM MRAP 2.4 – 31/03/2017) (2 months)*

#### **Develop Information Management Service Model**

- Develop new IM Service Model and catalogue of services based on required adjustments as a result of the environmental scan *(In support of IM MRAP 2.2 – 30/10/2016) (1 month)*
- Develop a captivating marketing and advertising plan for new EIM Services Model *(2 months)*
- Integrate new IM Services within enterprise frameworks and processes as required *(e.g. SLMF) (3 months)*

#### **Harmonize IM Functions across the Agency**

- Identify and propose common IM functions, job descriptions and classification levels for HQ and regions in support of records and information management functions *(In support of IM MRAP 3.4 – 30/01/2017) (1 month)*
- Introduce the Business Information Agent role *(6 months)*

### **Develop HR Plan and Investment Proposal**

- Proposal to bridge the gap between the current resource base and what will be required moving forward. Identify gaps in skills and competencies and propose new competencies to address changes in the IM environment *(In support of IM MRAP 3.5 – 20/02/2017) (2 months)*
- Request normalization of the Apollo support team in Gate 7 as the Apollo implementation project moves from project status to ongoing state through presentation to the Transformation, Innovation and Project Portfolio Committee (TIPP). *(In support of IM MRAP 3.2 – 30/08/2016)*

### **Develop Training & Development Plan**

- Identify training opportunities, courses and skills development for existing and new IM resources in order to build competencies and skill sets required to support business, and ensure usability of information resources in all formats. *(In support of IM MRAP 3.6 – 30/03/2017)*

## **8 Strategies & Actions**

In order to support the EIM vision, the following strategic directions are defined:

### **8.1 Strategic Direction #1: CBSA's Information is Managed Responsibly**



**Goal:** An information accountability framework that encourage desirable behavior in the valuation, creation, storage, use, archival and deletion of information.

#### **Current Gaps**

##### ***Operational***

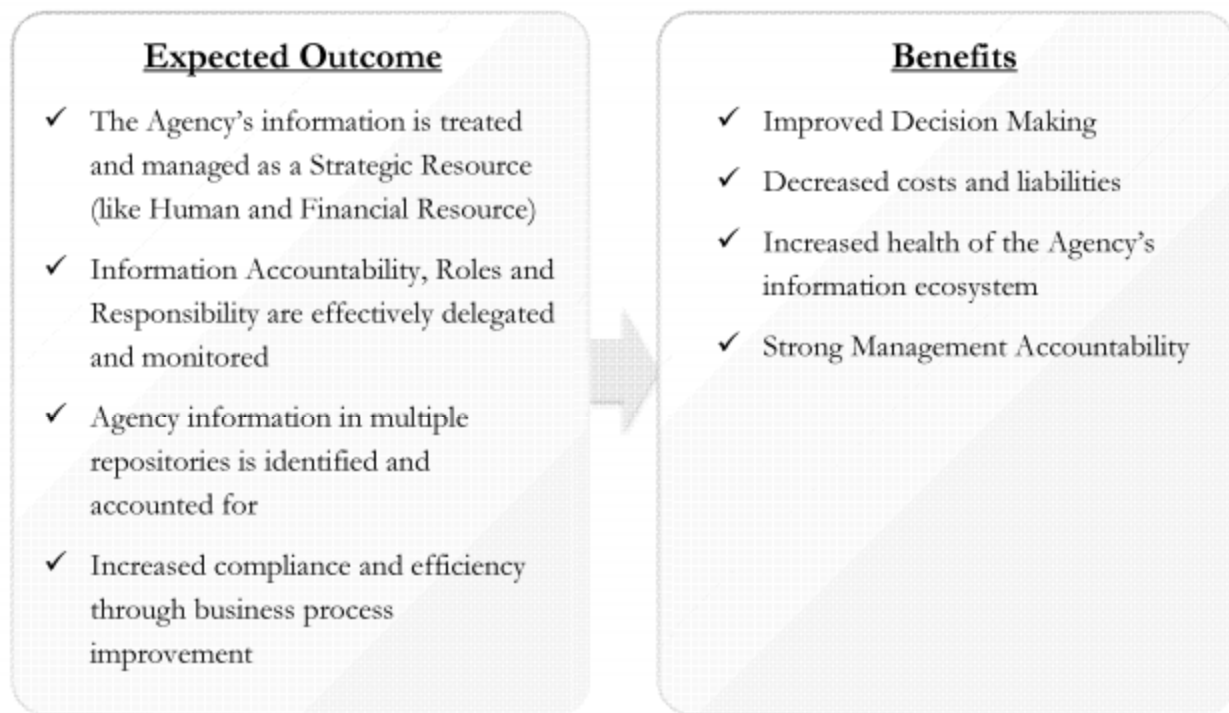
- Regional IM roles and responsibilities are often not acknowledged or defined

- Paper / electronic information unmanaged and orphaned
- Data quality challenge - no identified stewardship roles
- Data is siloed and inaccessible to most of Agency

### ***Compliance***

- Lack of information lifecycle management is liability risk

### **Value Chain**



### **Targeted Actions**

To move towards this strategic direction, the following actions are recommended:

- ✓ ***Develop National IM Performance Management & Reporting Framework***
  - Design tracking and measuring method for our performance at managing our business information holdings
  - Propose and seek IMC endorsement to create framework in order to track the management of paper and electronic records
  - Engage Corporate Affairs Branch for guidance and advice in the creation of a meaningful IM Performance Management Framework aligned with the Agency Performance Summary



- Identify key performance indicators for information management well defined and monitored
- ✓ ***Strengthen IM Roles and Responsibilities***
  - Review IM Roles, Responsibilities and Accountabilities, establish Information and Data Stewardship
  - Develop information accountability delegation model
  - Develop communication plan
  - Present communication plan to EC
- ✓ ***Perform Information / Data holdings Environment Scan***
  - Build a comprehensive Inventory of the Agency's information holdings
- ✓ ***Continue to work towards compliance to the GC Policy suite***
  - IM Support for elimination of paper forms
  - GC Recordkeeping directive
  - Implement Open Government Service to Canadian
  - CBSA Open Data Risk Assessment framework

*For further details on these proposed actions, please consult [Appendix C – Detailed Action Plan](#).*

*To see the proposed actions in context to overall activities of the strategy, please see [Appendix A – EIM Strategic Roadmap](#).*

## 8.2 Strategic Direction #2: CBSA's information is Created and Resides in a Managed Eco-system



**Goal:** Build an **engaging experience** through an **efficient Information Ecosystem** for the Agency

### Current Gaps

#### ***Operational***

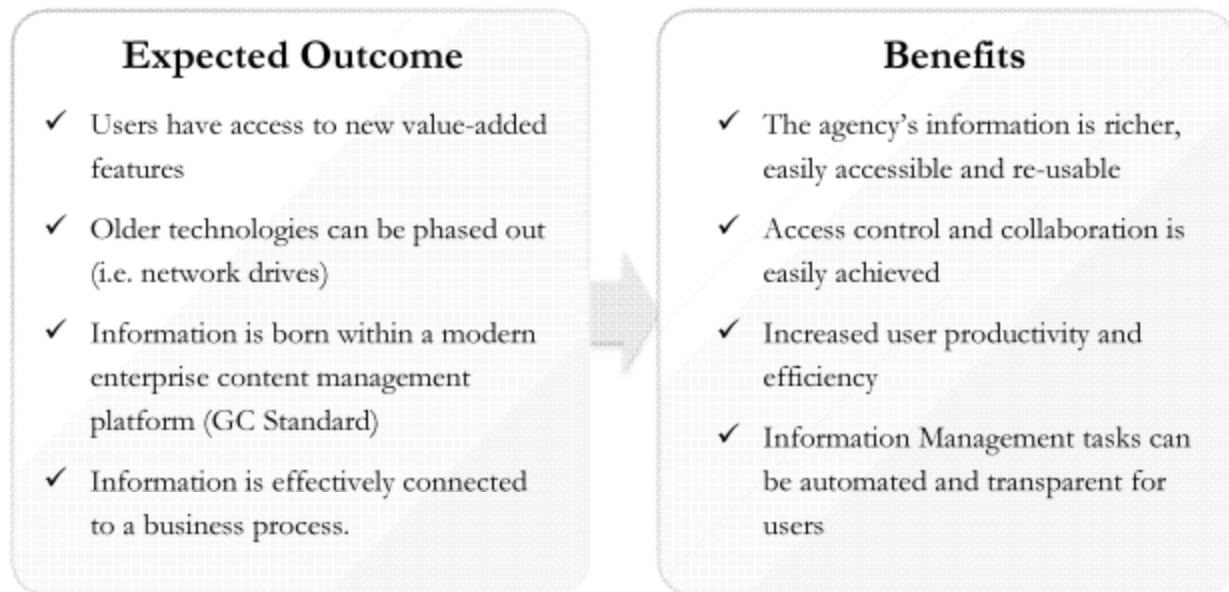
- Network drives, Outlook and local drives currently largest repositories of unstructured and unusable information

- Multiple stand alone and aging systems

### ***Compliance***

- Information not managed per Government of Canada regulation
- Everything is kept forever

### **Value Chain**



### **Targeted Actions**

To move towards this strategic direction, the following actions are recommended:

- ✓ ***Re-launch Apollo for business onboarding and adoption***
  - Improve system performance
  - Simplify information structure and rules
  - Transition clients to simplified structure
  - Upgrade Apollo to latest product iteration (Content Suite 2016)
  - Develop information migration strategy & methodology
- ✓ ***Optimize business information flows through enabling technology***
  - Initiate Digitization pilots
  - Assess automated metadata tools & auto-classification
  - Initiate automated workflows
  - Pilot Electronic signature integration
- ✓ ***Initiate Shared Drive clean-up and shut down***

- Develop strategy and methodology
- Work with partners to clean-up and shutdown
- ✓ ***Modernize the way we do recordkeeping & information lifecycle management***
  - Develop Information valuation and Prioritization system
  - Develop new Records Disposition Strategy & Process
  - Internal Policy Review & Update
  - Strengthen foundational records support by identifying and disseminating retention and disposition timeframes across regions for records activities
  - Phase out micro-film in favor of digitized records where feasible

*For further details on these proposed actions, please consult [Appendix C – Detailed Action Plan](#).*

*To see the proposed actions in context to overall activities of the strategy, please see [Appendix A – EIM Strategic Roadmap](#).*

### 8.3 Strategic Direction #3: Leverage Data to Measure and Improve Program Delivery



**Goal:** Transform the Agency’s capacity for data governance, business intelligence, and advanced analytics to drive better outcomes and decisions.

#### Current Gaps

##### ***Operational***

- Challenge in accessing data required to perform time sensitive front-line operations
- Poor data quality affects the Agency’s ability to make the right decisions
- Limited workforce skillsets
- Technology challenges

##### ***Compliance***

- Requirement to continuously measure and improve performance
- Open Government Directive requires proactive release of information and data to the public

## Value Chain



## Targeted Actions

The defined action plans for the *Data Analytics Initiative* and *Open Government Action Plan* are summarized as part of this EIM Strategy; for full details and context please see respective surrogate documents

*Data Analytics Initiatives:* [English](#) | [French](#)

*Open Government Implementation Plan (OGIP):* [English](#) | [French](#)

### • **Data Governance**

- ✓ 2016-2017
  - Establish Data Governance Centre
  - Complete Business Data Model - Phase II
  - Launch Open Government Implementation Plan (OGIP) 2016
- ✓ 2017-2018
  - Continue to address data integrity priorities
  - Operationalize Business Data Model
  - Release planning of data and information, OGIP 2017
- ✓ 2018-2019
  - Ongoing data governance, quality control
  - Ongoing maintenance
  - Ongoing delivery of data and information, OGIP 2018

- **Business Intelligence**

- ✓ 2016-2017

- Establish Integrated Data Warehouse (IDW)
    - Define requirements for Integrated Performance Reporting (IPR) tool, including access to the IRCC data warehouse

- ✓ 2017-2018

- Data acquisition and service delivery
    - Seek capital investment funding, project launch

- ✓ 2018-2019

- Ongoing data acquisition and service delivery
    - Project implementation and iterative delivery

- **Advanced Analytics**

- ✓ 2016-2017

- Expand operational analytics capacity, e.g. Targeting, Intelligence
    - Complete Program Optimization pilots e.g. trade fraud, API/PNR

- ✓ 2017-2018

- Implement operational analytics environment
    - Expand data science capacity

- ✓ 2018-2019

- Ongoing people management, maintenance

- **Open Government**

- ✓ 2016-2017

- Identification and cataloguing of data for Open Government
    - Execute the Agency's Methodology for Establishing a Data Inventory
    - Develop the required tools to support the management of the inventory and the publishing of datasets
    - Execute the Dataset Release Plan
    - Develop methodology for the information inventory
    - Endorse and approve new Open Government policies and protocols
    - Propose investment business case for non-structured information conversion (i.e. machine readable format)

- ✓ 2017-2018

- Conduct information inventory and associated Information Release Plan

- ✓ 2018+

- Focus on the release of Open Information

For further details on these proposed actions, please consult [Appendix C – Detailed Action Plan](#).

To see the proposed actions in context to overall activities of the strategy, please see [Appendix A – EIM Strategic Roadmap](#).

#### 8.4 Strategic Direction #4: Connect and Empower the workforce to succeed



**Goal:** Instill the right values to create a collaborative culture where information is treated as a strategic asset in support of efficient border management.

##### **Current Gaps:**

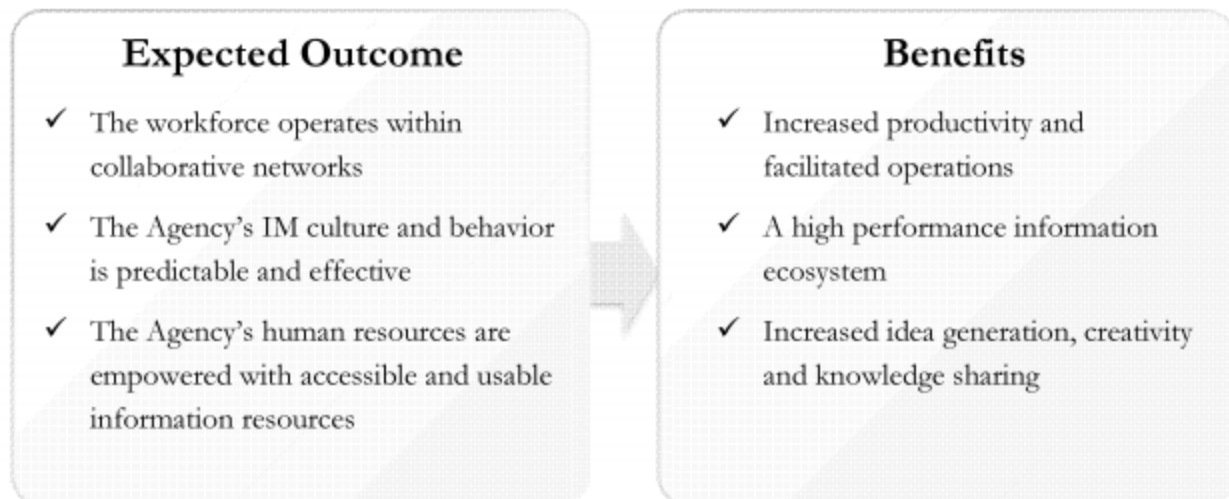
###### *Operational*

- Information currently in siloes
- Outdated business process inhibits efficient business collaboration

###### *Compliance*

- IM is viewed as an EIMD responsibility
- Open Government and Open by Default not part of culture

##### **Value Chain**



### **Targeted Actions:**

To move towards this strategic direction, the following actions are recommended:

- ✓ ***Identify and promote collaborative networking opportunities using Apollo capabilities***
  - Collaboration reference model and patterns
  - Early adopters project
- ✓ ***Increase quantity and availability of IM and Apollo training and coaching***
  - Develop Training Strategy
  - Develop a Train-the-Trainer approach
  - Expand power-user training
  - Develop a self-service training/tutorial portal
- ✓ ***Create Culture Change Management strategy***
  - Develop a Change Management Plan that will help improve our "Information Culture and Awareness"
  - Establish the IM Guides / Influencer network
- ✓ ***Increase connectivity and integration capabilities***
  - Mobile solutions (Apollo Mobility assessment e.g. Blackberry, Off-site)
  - Apollo business-app integration capability requirements
  - Integration of Apollo to Enterprise Search Capabilities

*For further details on these proposed actions, please consult [Appendix C – Detailed Action Plan](#).*

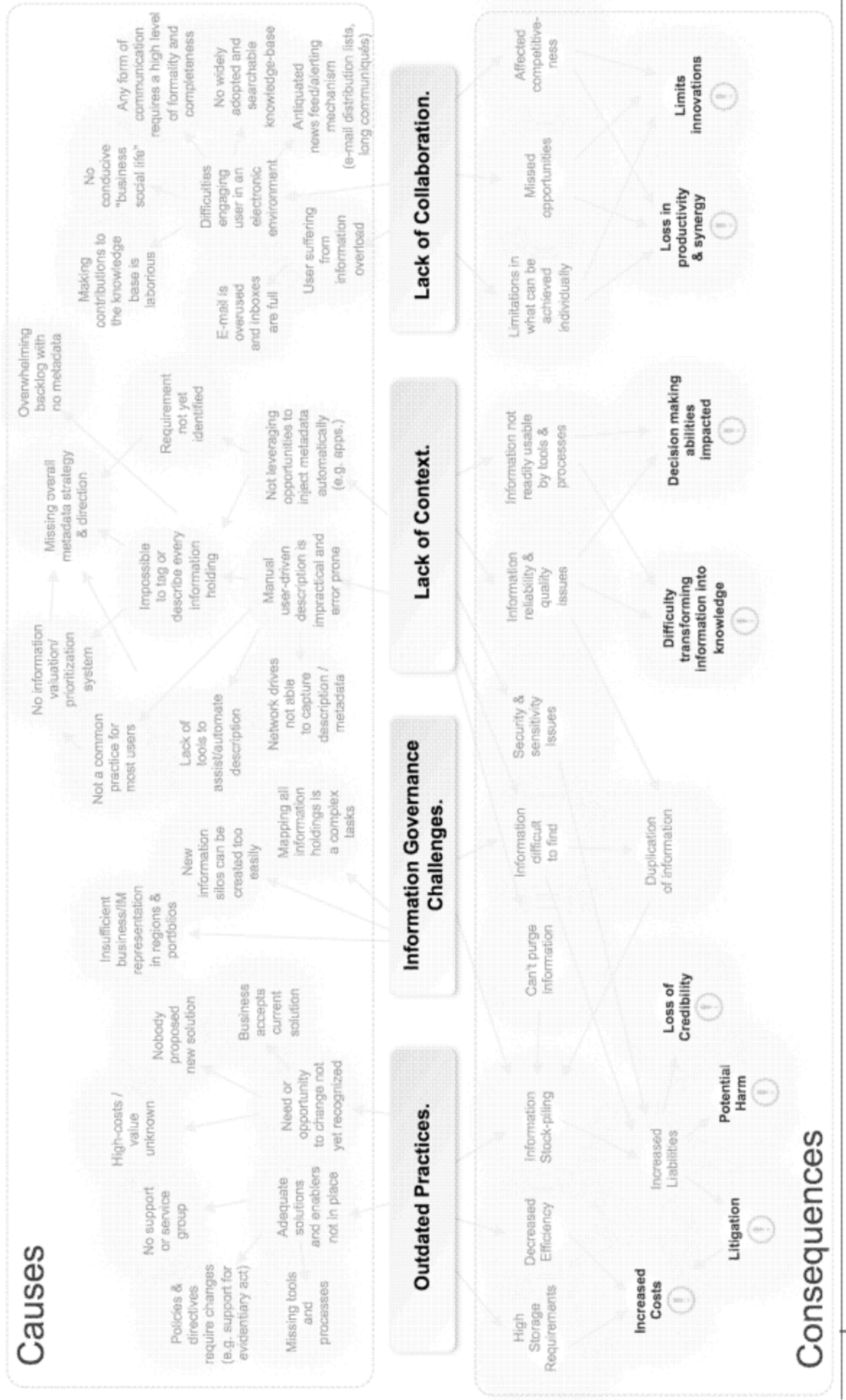
*To see the proposed actions in context to overall activities of the strategy, please see [Appendix A – EIM Strategic Roadmap](#).*

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## 10 APPENDIX B – IM Landscape: Root Cause Analysis



## 11 APPENDIX C - Detailed Action Plan

### 11.1 Strategic Direction 1



**Goal:** An information accountability framework that encourage desirable behavior in the valuation, creation, storage, use, archival and deletion of information.

<u>ID</u>	<u>Action</u>	<u>Duration</u>	<u>Owner</u>	<u>Alignment</u>
-----------	---------------	-----------------	--------------	------------------

<b><u>SD1.1</u></b>	<b><u>Develop National IM Performance Management &amp; Reporting Framework</u></b>	<b>4m</b>	<b>EIMD</b>
<b>SD1.1.1</b>	<u>Design</u> tracking and measuring method for our performance at managing our business information holdings	2m	
<b>SD1.1.2</b>	<u>Propose</u> and seek IMC endorsement to create framework in order to track the management of paper and electronic records.	1m	<i>In support of IM MRAP 4.2 - 31/12/2016</i>
<b>SD1.1.3</b>	Engage Corporate Affairs Branch for guidance and advice in the creation of a meaningful IM Performance Management Framework aligned with the Agency Performance Summary.	0.5m	<i>In support of IM MRAP 4.1 - 30/10/2016</i>
<b>SD1.1.4</b>	<u>Identify</u> key performance indicators for information management well defined and monitored	0.5m	
<b><u>SD1.2</u></b>	<b><u>Strengthen IM Roles and Responsibilities</u></b>	<b>4m</b>	<b>EIMD</b>
<b>SD1.2.1</b>	Review IM Roles, Responsibilities and Accountabilities <ul style="list-style-type: none"> <li>• <i>Establish Information and Data Stewardship</i></li> <li>• <i>Strong governance and understanding of roles at all levels</i></li> </ul>	1m	<i>In support of IM MRAP 1.2 - 31/06/2016</i>
<b>SD1.2.2</b>	<u>Develop</u> information accountability delegation model	2m	<i>In support of IM MRAP 1.5 - 31/07/2016</i>
<b>SD1.2.3</b>	<u>Develop</u> communication plan	1m	<i>In support of IM MRAP 1.3 - 31/07/2016</i>
<b>SD1.2.4</b>	<u>Present</u> communication plan to EC	-	<i>In support of IM MRAP 1.6 - 30/09/2016</i>
<b><u>SD1.3</u></b>	<b><u>Perform Information / Data holdings environment scan</u></b>	<b>12m</b>	<b>EIMD</b>
<b>SD1.3.1</b>	Build a comprehensive Inventory of the Agency's information holdings	12m	
<b><u>SD1.4</u></b>	<b><u>Continue to work towards compliance to the GC Policy suite</u></b> <ul style="list-style-type: none"> <li>• IM Support for elimination of paper forms</li> <li>• GC Recordkeeping directive</li> <li>• Implement Open Government Service to Canadian</li> <li>• CBSA Open Data Risk Assessment framework</li> </ul>	Ongoing	<b>EIMD</b>

## 11.2 Strategic Direction 2



**Goal:** Build an **engaging experience** through an **efficient Information Ecosystem** for the Agency

<u>ID</u>	<u>Action</u>	<u>Duration</u>	<u>Owner</u>	<u>Alignment</u>
-----------	---------------	-----------------	--------------	------------------

<b>SD2.1</b>	<b>Re-launch Apollo for business onboarding and adoption</b>	<b>18m</b>	<b>EIMD</b>
SD2.1.1	Improve system performance	4m	
SD2.1.2	Simplify information structure and rules	3m	
SD2.1.3	Transition clients to simplified structure	6m	
SD2.1.4	Upgrade Apollo to latest product iteration (Content Suite 2016)	3m	
SD2.1.5	Develop information migration strategy & methodology	3m	
<b>SD2.2</b>	<b>Optimize business information flows through enabling technology</b>	<b>23m</b>	<b>EIMD</b>
SD2.2.1	Initiate Digitization pilots <ul style="list-style-type: none"> <li>Develop Digitization strategy (2m)</li> <li>Pilot #1 (tbd) (2m)</li> <li>Pilot #2 (tbd) (2m)</li> </ul>	6m	
SD2.2.2	Assess automated metadata tools, auto-classification, etc. for staged implementation <ul style="list-style-type: none"> <li>Write Metadata &amp; Rich Description Strategy (2m) <ul style="list-style-type: none"> <li>Increase the usability and manageability of our business information through rich description</li> <li>Metadata capture and generation is automated</li> <li>Common Metadata strategy in place</li> </ul> </li> <li>Pilot Auto-Classification Solutions (6m)</li> <li>Pilot Metadata automation Tools (3m)</li> </ul>	11m	
SD2.2.3	Initiate automated workflows	3m	
SD2.2.4	Pilot Electronic signature integration	3m	
<b>SD2.3</b>	<b>Initiate Shared Drive clean-up and shut down</b>	<b>19m</b>	<b>EIMD</b>
SD2.3.1	Develop strategy and methodology (3m)		
SD2.3.2	Work with partners to clean-up and shutdown (16m)		
<b>SD2.4</b>	<b>Modernize the way we do recordkeeping &amp; Lifecycle Management</b>	<b>11m</b>	
SD2.4.1	Develop Information valuation and Prioritization system <ul style="list-style-type: none"> <li>New value &amp; risk based framework and solution for electronic recordkeeping</li> <li>Focus on Business/Information Process Optimization</li> </ul>	2m	
SD2.4.2	Develop new Records Disposition Strategy & Process	3m	
SD2.4.3	Internal Policy Review & Update	3m	
SD2.4.5	Strengthen foundational records support by identifying and disseminating retention and disposition timeframes across regions	3m	In support of IM MRAP 3.3 – 30/09-

### 11.3 Strategic Direction 3



**Goal:** Transform the Agency's capacity for data governance, business intelligence, and advanced analytics to drive better outcomes and decisions.

The defined action plans for the *Data Analytics Initiative* and *Open Government Action Plan* are summarized as part of this EIM Strategy; for full details and context please see respective surrogate documents

*Data Analytics Initiatives:* [LINK](#)

*Open Government Implementation Plan (OGIP):* [LINK](#)

<u>ID</u>	<u>Action</u>	<u>Duration</u>	<u>Owner</u>	<u>Alignment</u>
-----------	---------------	-----------------	--------------	------------------

### **SD3.1 Data Governance**

#### **SD3.1.1** 2016-2017

- Establish Data Governance Centre
- Complete Business Data Model - Phase II
- Launch Open Government Implementation Plan (OGIP) 2016

#### **SD3.1.2** 2017-2018

- Continue to address data integrity priorities
- Operationalize Business Data Model
- Release planning of data and information, OGIP 2017

#### **SD3.1.3** 2018-2019

- Ongoing data governance, quality control
- Ongoing maintenance
- Ongoing delivery of data and information, OGIP 2018

### **SD3.2 Business Intelligence**

#### **SD3.2.1** 2016-2017

- Establish Integrated Data Warehouse (IDW)
- Define requirements for Integrated Performance Reporting (IPR) tool

#### **SD3.2.2** 2017-2018

- Establish Integrated Data Warehouse (IDW)
- Define requirements for Integrated Performance Reporting (IPR) tool

#### **SD3.2.3** 2018-2019

- Ongoing data acquisition and service delivery
- Project implementation and iterative delivery

### **SD3.3 Advanced Analytics**

#### **SD3.3.1** 2016-2017

- Ongoing data acquisition and service delivery
- Project implementation and iterative delivery

#### **SD3.3.2** 2017-2018

- Implement operational analytics environment
- Expand data science capacity

#### **SD3.3.3** 2018-2019

- Ongoing people management, maintenance

### **SD3.4 Open Government**

#### **SD3.4.1** 2016-2017

- Identification and cataloguing of data for Open Government

- 
- Execute the Agency's Methodology for Establishing a Data Inventory
  - Develop the required tools to support the management of the inventory and the publishing of datasets
  - Execute the Dataset Release Plan
  - Develop methodology for the information inventory
  - Endorse and approve new Open Government policies and protocols
  - Propose investment business case for non-structured information conversion (i.e. machine readable format)

**SD3.4.2** 2017-2018

- Conduct information inventory and associated Information Release Plan

2018-2019

**SD3.4.3**

- Focus on the release of Open Information
- 

## 11.4 Strategic Direction 4



**Goal:** Instill the right values to create a collaborative culture where information is treated as a strategic asset in support of efficient border management.

---

<u>ID</u>	<u>Action</u>	<u>Duration</u>	<u>Owner</u>	<u>Alignment</u>
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<b>SD4.1</b>	<b>Identify and promote collaborative networking opportunities using Apollo capabilities</b>	<b>4m</b>	<b>EIMD</b>	
<b>SD4.1.1</b>	Collaboration reference model and patterns <ul style="list-style-type: none"> <li>Make it easier for people to <u>author, share and discover</u> information               <ul style="list-style-type: none"> <li>Convenient electronic Team Workspaces</li> <li>Usable document management features</li> <li>Ability to find information throughout all repositories reliably</li> <li>Wikis &amp; Discussions</li> </ul> </li> <li>Allow people to connect and follow other's social business streams               <ul style="list-style-type: none"> <li>Easily find other user's profile and connect with them</li> <li>Enterprise Social Pulse (Timeline, Alerting &amp; Notification, Followers, etc.)</li> <li>Instant Messaging</li> <li>Tasks &amp; Team Work Tracking</li> </ul> </li> </ul>	1m		
<b>SD4.1.2</b>	Early adopters project <ul style="list-style-type: none"> <li>Collaboration Pilot 1 (tbd)</li> <li>Collaboration Pilot 2 (tbd)</li> <li>Collaboration Pilot 3 (tbd)</li> </ul>	3m		
<b>SD4.2</b>	<b>Increase quantity and availability of IM and Apollo training and coaching</b>	<b>11m</b>	<b>EIMD</b>	
<b>SD4.2.1</b>	<u>Develop</u> Training Strategy	1m		
<b>SD4.2.2</b>	<u>Develop</u> a Train-the-Trainer approach	3m		
<b>SD4.2.3</b>	<u>Expand</u> power-user training	1m		
<b>SD4.2.4</b>	<u>Develop</u> a self-service training/tutorial portal	6m		
<b>SD4.3</b>	<b>Create Culture Change Management strategy</b>	<b>11m</b>	<b>EIMD</b>	<i>In support of IM MRAP 2.3 – 30/11/2016</i>
<b>SD4.3.1</b>	<u>Develop</u> a Change Management Plan that will help improve our "Information Culture and Awareness" <ul style="list-style-type: none"> <li>Communication plan</li> <li>Training and Coaching</li> <li>Mission Values</li> </ul>	5m		
<b>SD4.3.2</b>	<u>Establish</u> the IM Guides / Influencer network	6m		
<b>SD4.4</b>	<b>Increase connectivity and integration capabilities</b>	<b>7m</b>		
<b>SD4.4.1</b>	Apollo Mobility assessment	1m		
<b>SD4.4.2</b>	Apollo business-app integration capability requirements	2m		
<b>SD2.4.3</b>	Integration of Apollo to Enterprise Search Capabilities	4m		



Canada Border  
Services Agency    Agence des services  
frontaliers du Canada



# **CBSA Information Management Strategy**

## **Information Management Committee (IMC)**

Information Science and Technology Branch (ISTB)

**August 23, 2016**

Apollo # 3908207

PROTECTION • SERVICE • INTEGRITY

**Canada**



# Agenda

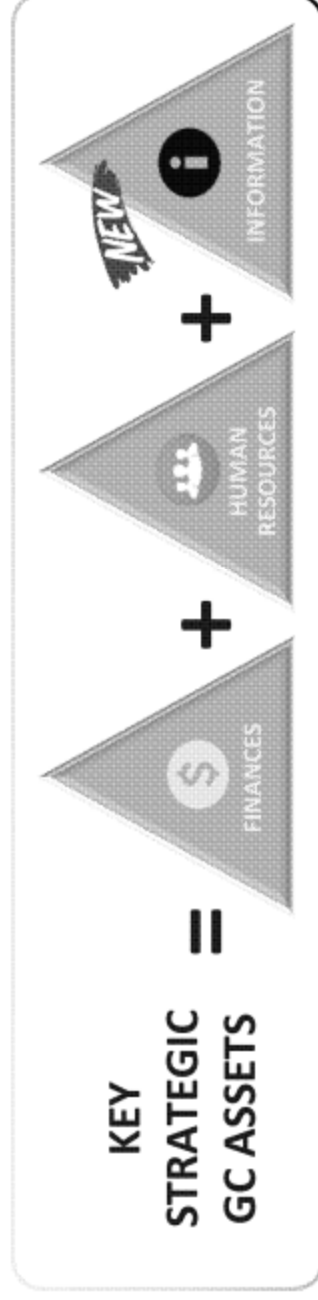
- Value Proposition
- The Changing Information Environment
- The CBSA IM Vision
- IM Principles
- 3 Year IM Strategy
- 2016/17 Action Plan Highlights
- Risks / Challenges
- Summary
- Annexes



# Value Proposition

Information is a Business Resource (like Human Resources and Finance). Not managing it is not a viable option:

- Information can enable us and overwhelm us. There is such a thing as “Too much information”
- Everything we do within the Agency starts with information and generates more information
- The Agency renders decisions every minute using “Information”



*TBS Vision of GC Strategic Assets*



# Desired Outcomes of Information Management Strategy

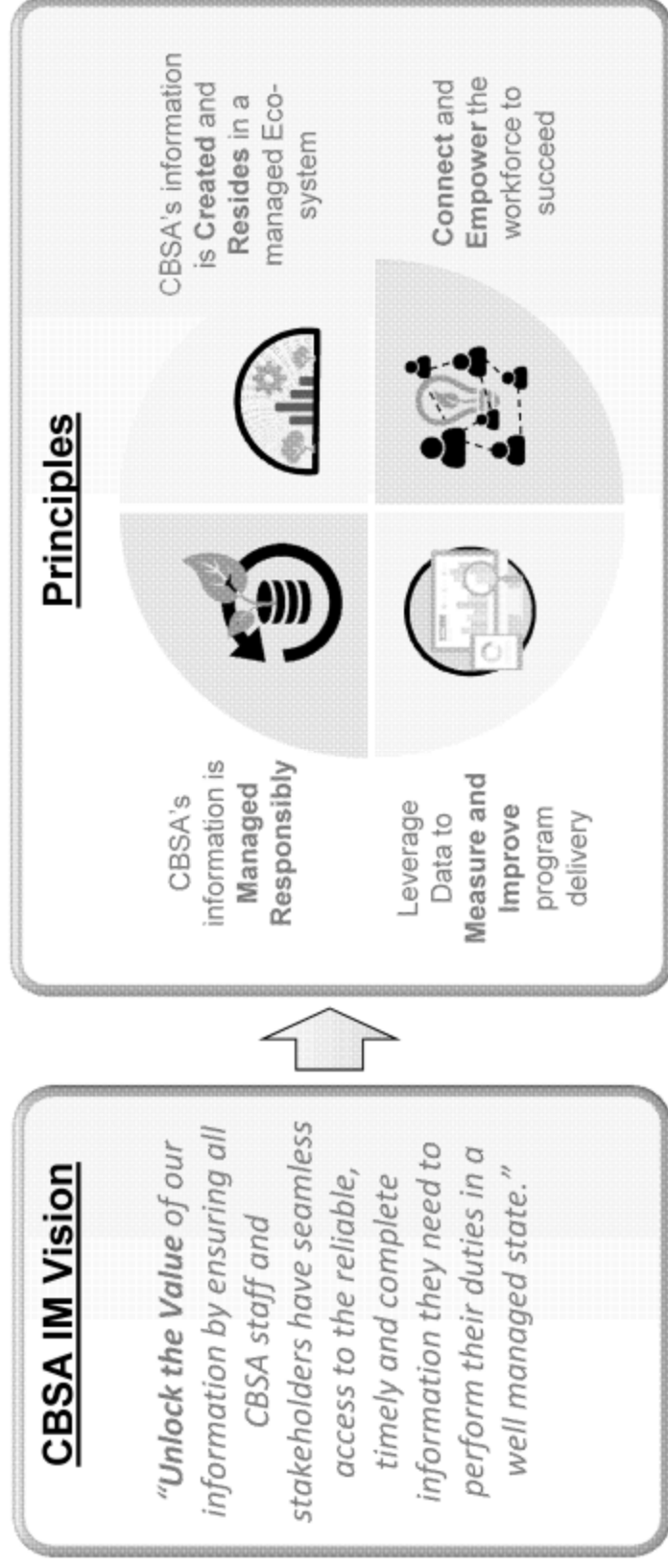
- Globally, the information environment has become increasingly complex and challenging to manage.
- Tools and techniques are evolving but fall short of optimizing Agency Information as a critical resource
- The IM strategy drives the paradigm shift from traditional IM approaches and solutions to what is and will continue to be required moving forward in the public service

Domain of Activity	Current State	Desired Outcome
EIM is a foundational business support	Compliance-focused, primarily reactive involvement in business processes and operations.	Proactively involved with business clients (as early as planning stage), focused on improving information flows and availability of information.
EIM Services supports the business in managing Agency information	Mandated and difficult enterprise-wide solutions. ("Thou shalt comply" mindset)	Relevant, reliable, and efficient services, tools and solutions provided to business client. ("Business comes first" mindset)
Management of information is focussed on high value information resources	All unstructured information treated as equally important making it difficult to focus resources and efforts strategically.	Risk-based approaches successfully applied to minimize on-going management of transitory information and focus resources on information of business value. (Focus efforts on high-value resources)
Agency information is lifecycle managed to ensure high value information is not lost	Reliance on unproven and limited functionality proposed by content management system vendor.	Innovative use of a wide spectrum of solutions to iteratively and progressively develop the Agency's capability to perform information lifecycle management. (slowly move yardstick forward)
Information Management program activities and initiatives are designed around CBSA business needs	Sequential records based process with little client input, narrow focus, multi-year deliveries, risk of rejection	Incubation, progressive release, early adopters, starting with small changes, building up support and user comfort.
Information Resources of Business Value are identified, mapped and organized for efficiency and productivity	Spread across multiple unstructured repositories, low-visibility, out-of-context. Low usability of the information.	Centralized, highly integrated enterprise content management platform, metadata-rich. High business usability of information.







# Vision

- The Information Management Committee (IMC) approved Principles (April 2016) lay the foundation for an IM strategy that supports the creation of an **Agency Information ecosystem of managed repositories, a connected and networked workforce, and alignment to Government of Canada (GC) IM policy and direction.**



# CBSA IM Principles

The CBSA IM principles provide the framework to help us understand and organize our efforts and develop :

IM Principles		Key Deliverables
	CBSA's information is <b>Managed Responsibly</b>	Create an information accountability framework that encourages desirable behavior in the valuation, creation, storage, use, archiving and deletion of information.
	CBSA's information is <b>Created</b> and <b>Resides</b> in a managed Eco-system	Continue Agency adoption of Apollo, increase management of email business information and decommissioning of network drives in support of Agency business and alignment to GC.
	Leverage Data to <b>Measure and Improve</b> program delivery	Mature the Agency's capacity for data governance, business intelligence, and advanced analytics to drive better risk management, enforcement and decisions.
	<b>Connect and Empower</b> the workforce to succeed	Action organizational culture change through communications, marketing, and workshops to facilitate the sharing of information and knowledge as a strategic asset for efficient border management.



# 3 Year IM Strategy Road Map

- **2016/17**

- Continue user on-boarding of Apollo in HQ and on-board regions
- Continue to assist users in the management of email information of business value in support of Email Transformation Initiative
- IM Services environmental scan and alignment with new GC IM Strategy
- Action all internal CBSA and Office of Comptroller General Audit deliverables
- Initiate Network Drive clean-up and shut down “campaign”
- Transformation of EIM Division – HR Plan and Financial Sustainability
- Begin executing the CBSA Open Government Implementation Plan
- Identify releasable data sets for Open Government and begin release
- Publish CBSA conceptual information architecture V1
- Implement the CBSA Data Analytics Business Case

- **2017/18**

- Continue standardization of IM functions across the regions
- Identify and map data / information repositories with information architecture that reflects business model
- Modernization of RecordKeeping and information lifecycle management
  - Initial electronic disposition via Apollo.
- Begin release of identified data sets for Open Government

- **2018/19**

- Revise 3 year IM strategy based on results achieved and GC direction.
- Migration of Apollo to GC Hosted GCDocs environment
- Increase integration with information systems and technology
- On-going release of approved data sets for Open Government

On-going improvement and activities in support of:  
IM Education / Awareness, Roles and Responsibilities,  
performance monitoring and measurement.





# 2016/17 Action Plan Highlights

As part of the overall 2016-2018 Strategic Direction Roadmap, the following activities are proposed for the current fiscal year (2016/17 one-year plan):



## IM Transformation Activities

- Environmental scan to identify gaps between current IM services and TBS Government of Canada IM Strategy (Q3-2016 / Office of Comptroller General (OCG) Audit Deliverable)
- Develop new IM Service Model and catalogue of services (Q4-2016 / CBSA Audit Deliverable)
- Propose common IM functions / competencies / job descriptions / classification levels throughout the CBSA (Q1-2017 / OCG and CBSA Audit Deliverable)
- Develop Human Resources Plan, Training and Development Plan and Investment proposal in support of ongoing IM capacity and competency profile (Q3-2016 / OCG and CBSA Audit Deliverable)



## Strategic Activities



- Continue business on-boarding and adoption of Apollo – improve performance and stability (Q4-2016)
- Initiate Shared Drive clean-up and shut down (Q4-2016)
- Execute the approved CBSA Open Government Implementation Plan (OGIP) (Q4-2016)
- Implement the CBSA Data Analytics Business Case (pending EC approval) (Q4-2016)
- Develop IM Performance Management Framework and scorecard – seek IMC endorsement (Q3-2016 / CBSA and OCG Audit Deliverable)
- Review IM Roles, Responsibilities and Accountabilities within the Agency (Q2-2016 / CCBSA Audit Deliverable)
- Develop IM Roles, Responsibilities and Accountabilities communication plan – present to Executive Committee (Q2-2016 / CBSA Audit Deliverable)
- Increase IM Awareness activities including communications, workshops, outreach in support of organizational culture change. (Q1-2017)
- Increase quantity and availability of IM and Apollo training and coaching (Q1-2017)



# Risks / Challenges

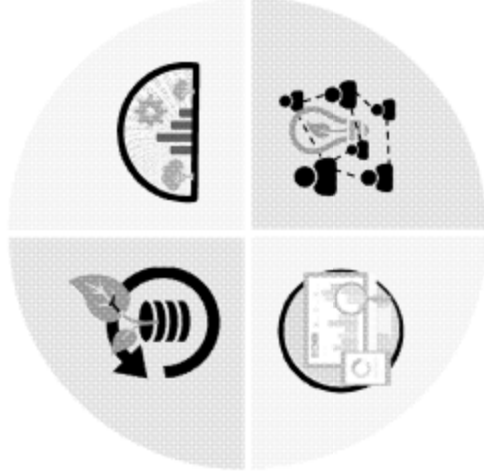
Risks	Description	Proposed Mitigation
Employee Awareness	Disengagement of workforce in the management of information.	Ongoing awareness and communications. Specific controls to facilitate information management including obligation to save in Apollo, read only network drives, no email attachments.
External Service Delivery	Delivery date of GCDOCS Hosted Service not expected before 2018-19	Continue with CBSA hosted solution while continuing to align with service provider vision/architecture
Treasury Board Secretariat IM Strategy	Potential upcoming changes to TBS GC EIM Strategy, Policy and Directives	Proactively engage and collaborate with central agencies through key committees to monitor trends and changes
Funding	Insufficient resources to support EIM program and enable transformation over multiple years	Prioritize strategic action plan and focus resources on key business support activities
Data vs Information	Structure databases are subject to same information lifecycle management policy requirements	Complete the information and data architectures with a focus on Mission Critical services and systems



# Summary

## Recommendations for IMC:

- Endorsement of 3 year IM strategy
- Provide on-going advice and guidance as 1 year action is implemented
- Provide ambassadorship role through visible senior management "leading by example" and setting of IM expectations
- Monitor IM Strategy progress quarterly at IMC and annually at Executive Committee



"... Information is a source of learning. But unless it is organized, processed, and available to the right people in a format for decision making, it is a burden, not a benefit."

- William Pollard


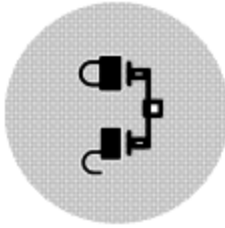





# ANNEXES



# Guiding Principles

CBSA EIM adopts Guiding Principles defined in the *Government of Canada Enterprise Information Management Strategy*, as follows:

 <p><b>Enterprise-First</b></p> <ul style="list-style-type: none"> <li>• Created once, reused numerous times</li> <li>• Single, aligned, enterprise asset</li> <li>• Consistent, standardized, interoperable, GC-wide</li> <li>• Scalable, rapid deployment</li> </ul>	 <p><b>Open and Secure</b></p> <ul style="list-style-type: none"> <li>• Open by default – transparent, accountable, proactive</li> <li>• Authoritative and trusted by all</li> <li>• Safeguarded for security, privacy, confidentiality</li> <li>• Monitored to prevent leaks</li> <li>• Protected for future generations</li> </ul>	 <p><b>User-Centric</b></p> <ul style="list-style-type: none"> <li>• Accessible when and where needed</li> <li>• Customizable tools and resources</li> <li>• Minimized learning requirements for users</li> <li>• Automated, digital processes, including disposition</li> </ul>	 <p><b>Smart</b></p> <ul style="list-style-type: none"> <li>• Informed decisions, minimized risks</li> <li>• Leveraged to maximum potential</li> <li>• Cost-effective, efficient solutions</li> <li>• Facilitated reuse, classification, sharing, analytics</li> <li>• Continuously improved to ensure quality</li> </ul>	 <p><b>Networked and Collaborative</b></p> <ul style="list-style-type: none"> <li>• Enabler for a collaborative, flexible workforce</li> <li>• Enhanced expertise and innovation</li> <li>• Fast, government-wide search and retrieval</li> </ul>
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# TBS Mandated Roles and Responsibility

- TBS' proposed IM Policy Suite Reset (2016) introduces key changes in the Roles and Responsibilities for the management of information:
  - *Designates the Chief Information Officer (CIO/IMSO)* as the official responsible for providing leadership, coordination, and oversight responsibilities for the management of information in support of the development and delivery of Government of Canada policies, programs, and services.
  - Proposes a new *Directive on Managing Information* (4 mandatory procedures and 2 standards) and delineates the responsibilities of departmental CIO, senior management and individuals in the management of information.
- New responsibilities for Deputy Heads and the CIO include (as per *Annex B-C of the proposed policy suite reset*) :
  - Establishing practices and procedures for consistent management of information resources in their department that align with government-wide direction (Annex B 1.1);
  - Ensuring that decisions on the development and delivery of policies, programs, and services, and the evidence supporting those decisions, are documented (Annex B 1.2);
  - Integrating IM requirements into the development and delivery of policy, program, and services, evaluation and reporting (Annex B 1.3);
  - Aligning investments in IM tools, solutions and systems with Government of Canada direction (Annex B -4);
  - Approving a departmental IM plan that details the activities to be undertaken for the management of information in the department and for meeting government-wide IM objectives (Annex B 1.10).
  - Developing and maintaining a departmental IM plan that details activities to be undertaken to manage the information of the department and to meet government-wide IM priorities and objectives (Annex C 1.1).
  - Identifying information resources of business value held by the department based on an analysis of departmental functions and activities (Annex C 1.2).
  - Establishing and maintaining designated corporate repositories, classification structures, and metadata to facilitate search and retrieval of information resources of business value (Annex C 1.3).
  - Performing regular disposition activities for all information resources according to documented processes (Annex C 1.4)



# Impetus for Change

## Internal Drivers

- Aging information flows and business processes
- Information is born / created in unmanaged electronic repositories
- Information stockpiling
- Lack of oversight on most of the Agency's information holdings
- Limited ability to facilitate bringing together new ideas (crowdsourcing) and engagement of the workforce
- Limited Reach of Information Management support services
- Difficulty implementing efficient Electronic Records Management processes

## External Drivers

- TBS GC Enterprise IM Strategy and Policy on Information Management
- TBS's Directive on Recordkeeping prescribed level of maturity
- TBS's Directive on Open Government
- LAC issuance of Records Disposition Authorities (RDA) and information disposition requirements
- LAC no longer be accepting information of enduring value created in paper format after 2017
- As of July 2015, LAC no longer stores records that are not of enduring value. Boxes of paper are being returned to the originating departments



## Agency internal audit of IM (2015-16)

- CBSA participated in a horizontal internal audit of IM carried out in 2015-2016 by the Office of the Comptroller General (OCG).
- The audit has identified that the Agency has governance and some monitoring frameworks in place to support IM; however, IM is currently delivered as a number of initiatives instead of an Agency-wide program.
- As a result, there is an ongoing risk that IM will not be integrated as a foundational business support for the Agency's activities.
- Opportunities exist to enhance roles and responsibilities, accountabilities, procedures, and reporting and monitoring practices for IM.
- The audit reported several findings and issued the following recommendations:
  1. Further define and communicate IM responsibilities and accountabilities;
  2. Implement and communicate standard IM tools, guidance and best practices across the Agency;
  3. Develop and implement Agency-wide operational and human resource plans for IM; and
  4. Monitor and Report IM on a regular basis.





## CBSA's information is Managed responsibly

### OUTCOMES

- The Agency's information is treated and managed as a Strategic Resource (like Human and Financial Resource)
- Information Accountabilities, Roles and Responsibilities are effectively delegated and monitored
- Agency information in multiple repositories is identified and accounted for
- Increased compliance and efficiency through business process improvement



### BENEFITS

- Improved Decision Making
- Decreased costs and liabilities
- Increased health of the Agency's information ecosystem
- Strong Management Accountability

### CURRENT GAPS

#### Operational

- Regional IM roles and responsibilities are often not acknowledged or defined
- Paper / electronic information unmanaged and orphaned
- Data quality challenge - no identified stewardship roles
- Data is siloed and inaccessible to most of Agency

#### Compliance

- Lack of information lifecycle management is a compliance risk

### KEY INITIATIVES

- National IM Reporting Framework
- Strengthen IM Roles and Responsibilities
- Perform Information / Data holdings environment scan
- Continue to work towards compliance to the GC Policy suite
- Organizational change management plan in support of collaboration and information sharing



## CBSA's information is created and resides in a managed Eco-system

### OUTCOMES

- Users have access to new value-added features
- Older technologies can be phased out (i.e. network drives)
- Information is born within a modern enterprise content management platform (GC Standard)
- Information is effectively connected to a business process.



### BENEFITS

- The agency's Information is richer, easily accessible and re-usable
- Access permissions and collaboration is facilitated
- Increased user productivity and efficiency
- Information Management tasks can be integrated and transparent for users
- Currently unused or under-used information assets can be leveraged
- Organizational knowledge and memory is protected

### CURRENT GAPS

#### Operational

- Network drives, Outlook, local drives and PSTs currently largest repositories of unstructured and currently unusable business information resources
- Multiple stand alone and aging systems

#### Compliance

- Information not managed per GC regulation
- No efficient process in place to efficiently purge information – increased liability and clutter

### KEY INITIATIVES

- Re-launch Apollo for business onboarding and adoption
- Optimize business information flows through enabling technology
- Shared Drive clean-up and shut down
- Capture business information in siloed repositories
- Modernize the way we do recordkeeping and Lifecycle Management



## Leverage Data to **Measure and Improve** performance

### OUTCOMES

- Improved program delivery
- Identifying opportunities for greater efficiency across Agency
- Single version of the truth
- Increased opportunity for organizational learning



### BENEFITS

- Improved situational awareness and decision-making
- Increased competitiveness and efficiency
- Reduced Agency risk posture
- Opportunities for cost avoidance and savings

### CURRENT GAPS

#### Operational

- Challenge in accessing data required to perform time sensitive front-line operations.
- Poor data quality affects the Agency's ability to make the right decisions.
- Limited workforce skillsets.
- Technology challenges.

#### Compliance

- Requirement to continuously measure and improve performance.
- Open Government Directive requires proactive release of information and data to the public.

### KEY INITIATIVES

- Data acquisition involving the identification and prioritization of CBSA, GC, and third-party data
- Establishing a task force dedicated to privacy and security
- Applying best practices from B5 partners
- Workforce skill development and recruitment
- Execute the approved CBSA Open Government Implementation Plan (OGIP)



## Connect and Empower the workforce to succeed

### OUTCOMES

- The workforce operates within collaborative networks
- The Agency's IM culture and behavior is predictable and effective
- The Agency's human resources are empowered with accessible and usable information resources



### BENEFITS

- Increased productivity and facilitated operations
- A high performance information ecosystem
- Increased idea generation, creativity and knowledge sharing

### CURRENT GAPS

#### Operational

- Information currently in siloes
- Outdated business processes inhibits efficient business collaboration

#### Compliance

- IM is viewed as an EIMD responsibility
- Open Government and Open by Default not part of culture.

### KEY INITIATIVES

- Identify and promote collaborative networking opportunities using Apollo capabilities
- Increase quantity and availability of IM and Apollo training and coaching
- Create Culture Change Management strategy
- Increase connectivity and integration capabilities



	2016				2017				2018				2019	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
 EIM Transformation														
 CBSA's Information Managed Responsibly														
 CBSA's Information Created and Resides in a Managed Eco-system														
 Leverage Data to Measure and Improve program delivery														
 Connect and Empower the workforce to succeed														



## Science and Engineering Directorate

### Border Technology Division

Division Report 2016-08 (TR)  
February, 2016

Predictive Analytics Pilot in the  
Traveller Stream

Sofia Auer and Darren  
Coughtrey

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